

Appendix B1

EIA Scoping Report

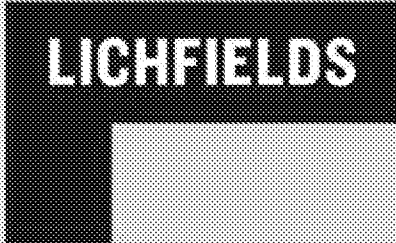
Land at Barnham, Eastergate and Westergate (BEW) Environmental Impact Assessment Scoping Report

**Information to accompany a request for Arun
District Council to form a Scoping Report**

The Southern Consortium - Church Commissioners for England and
Hanbury Properties Limited

September 2020

LICHFIELDS



LICHFIELDS

Lichfields is the pre-eminent planning and development consultancy in the UK

We've been helping create great places
for over 50 years.

lichfields.uk

© 2020 Nathaniel Lichfield & Partners Ltd, trading as Lichfields. All Rights Reserved. Registered in England, no. 27781116. 14 Regent's Wharf, All Saints Street, London N1 9PL.
Formatted for double sided printing.
Plans based upon Ordnance Survey mapping with the permission of Her Majesty's Stationery Office.
© Crown Copyright reserved. Licence number AL50684A
14677/SS/NM
18657686v8

Contents

1.0	Introduction	1
	Purpose of document	1
	Report structure	1
2.0	Background	2
	Legislative Requirements	2
	The applicant	2
	Background to the Development	3
	Consultation	4
	Summary	4
3.0	Site Location and Description	5
	The Site and surroundings	5
	Environmental and policy context	7
4.0	Proposed Development	8
	Form and scale of the development	8
	Access	8
	Landscaping	8
	Sustainability	9
	Construction and phasing	9
	Consideration of alternatives	9
	Other development and cumulative effects	10
5.0	Transportation	13
	Current Conditions	13
	Methodological Approach	15
	Significance Criteria	18
	Anticipated Effects	21
	Potential Mitigation	22
	Summary	22
6.0	Landscape and Views	23
	Current Conditions	23
	Methodological Approach	24

	Anticipated Effects	25
	Potential Mitigation	26
	Summary	26
7.0	Ecology	27
	Current Conditions	27
	Anticipated Effects	30
	Potential Mitigation	31
	Summary	35
8.0	Air Quality	37
	Current Conditions	37
	Methodological Approach	37
	Anticipated Effects	38
	Potential Mitigation	38
	Summary	39
9.0	Noise and Vibration	40
	Current Conditions	40
	Methodological Approach	41
	Anticipated Effects	45
	Potential Mitigation	47
	Summary	47
10.0	Historic Built Environment	48
11.0	Archaeology	50
	Anticipated Effects	53
	Potential Mitigation	53
12.0	Water Environment and Drainage	54
	Current Conditions	54
	Methodological Approach	55
	Potential Mitigation	57
	Summary	58
13.0	Socio-Economics	59
	Current Conditions	59

	Methodological Approach	59
	Anticipated Effects	61
	Potential Mitigation	62
	Summary	62
14.0	Climate Change and Resilience	63
	Current Conditions	63
	Methodological Approach	63
	Anticipated Effects	66
	Summary	66
15.0	Ground Conditions and Soils	67
	Current Conditions	67
	Geology	67
	Methodological Approach	68
	Anticipated Effects	68
	Potential Mitigation	69
	Summary	69
16.0	Health	70
17.0	Other Matters for Consideration	71
	Energy and Utilities	71
	Agricultural Land	71
	Waste	71
	Risk of Accidents and Disasters	72
	Daylight, Sunlight and Overshadowing	72
	Wind Environment	72
18.0	General Approach and Form of the ES	73
	Methodological Approach	73
	Structure and format of ES	74
	The team	74
	Associated application	74
19.0	Summary	75

Appendices

- Appendix 1 Site Location Plan
- Appendix 2 LVIA Key Views and Methodology
- Appendix 3 Plan of Ecological Features

1.0 Introduction

Purpose of document

- 1.1 This document provides information to assist Arun District Council ('ADC') in forming an Environmental Impact Assessment ('EIA') Scoping Opinion. It has been prepared pursuant to Regulation 15 of the Town and Country Planning (EIA) Regulations 2017 as amended by the Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018 (together 'the 2017 EIA Regulations').
- 1.2 The document is submitted on behalf of The Southern Consortium ('the Applicant'), consisting of The Church Commissioners for England ('CCfE') and Hanbury Properties Limited. It relates to the proposed development for land north of the railway line at the Barnham, Eastergate and Westergate strategic allocation, alongside the A29 realignment south of Barnham Road to Lidsey Road ('the development').

Report structure

- 1.3 The report is structured as follows:
- Section 2.0 – background information about the development and why the EIA is being carried out;
 - Section 3.0 – a description of the site and surroundings;
 - Section 4.0 – a description of the key features of the proposed development;
 - Sections 5.0 to 17.0 – provide a review of the potential environmental impacts arising from the development as a means to identify those matters to be scoped into the EIA; and
 - Section 18.0 – outlines general methodological approach, summarises the team and refers to any other documents being submitted alongside the application; and
 - Section 19.0 – provides a summary of the proposed form of the Environmental Statement ('ES').

2.0 Background

Legislative Requirements

- 2.1 The current Regulations are the Town and Country Planning (EIA) Regulations 2017 which came into force on 16 May 2017. These were amended by the Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018 which came into force on 1 October 2018 (together the '2017 EIA Regulations'). The Barnham, Eastergate and Westergate ('BEW') ES will be prepared with regard to the 2017 EIA Regulations.
- 2.2 In accordance with the 2017 EIA Regulations and the procedures specified to facilitate the preparation of ESs, the applicant confirms that it intends to submit an ES to ADC with the planning application for the proposed development at BEW.
- 2.3 The development falls within Part 10(b) of Schedule 2 of the 2017 EIA Regulations as an urban development project which includes more than 150 dwellings.
- 2.4 For Schedule 2 developments, the 2017 EIA Regulations require that an EIA is undertaken where the development is "likely to have significant effects on the environment by virtue of factors such as its nature, size and location".
- 2.5 Schedule 3 of the 2017 EIA Regulations goes on to identify the characteristics of the development, the sensitivity of the location and the characteristics of the potential impact as the key 'Selection Criteria for screening Schedule 2 development'. In light of these, EIA will be required for Schedule 2 development in three main types of case:
- 1 Major development which is of more than local importance;
 - 2 Developments located in particularly environmentally sensitive or vulnerable locations; and
 - 3 Developments with unusually complex and potentially hazardous environmental effects.
- 2.6 It has been determined by the applicant that the development should be subject to EIA to ensure that any likely significant effects can be identified, and mitigation and monitoring measures specified as required.
- 2.7 To assist ADC and consultees in forming an EIA scoping opinion, this report provides as much information as possible in relation to the BEW development and identify the likely environmental effects and suggested content of the EIA. It includes information on:
- 4 Site location and description;
 - 5 Description of the nature and purpose of the development;
 - 6 Possible environmental effects; and
 - 7 Proposed form of the ES.
- 2.8 To further assist in this consideration, the remainder of this section provides information on the background and need for the proposed development

The applicant

- 2.9 The applicant is the Southern Consortium, made up of the Church Commissioners for England (CCE) and Hanbury Properties Limited. Both landowners have been collaborating since at least 2009 with a view to realising the development potential of this site and more recently, they have been promoting the site and Framework Masterplan through public consultation and the Local Plan process.

Background to the Development

2.10 The Arun District Council Local Plan (2018) has identified the Site and the surrounding land as suitable for a new community including new homes and associated infrastructure, including two new primary schools and community facilities. The strategic allocation is outlined under Policy H SP2c (SD5) 'Barnham/ Eastergate/ Westergate' as follows:

This allocation is located around the small settlements of Barnham, Eastergate and Westergate. This Strategic Allocation will provide at least 2,300 dwellings over the plan period, and up to 3,000 in total (a further 700 beyond 2031). Development proposals must demonstrate compliance with the following key design and infrastructure requirements:

- a *Preserve the separate identities and avoid any further physical coalescence of the three villages of Barnham, Eastergate and Westergate through the delivery of green infrastructure. Eastergate and Barnham should be protected from a continuous urban form / coalescence along the north and south aspects of the B2233,*
- b *the design of development and landscaping shall ensure that there is continuity between the existing landscape setting and villages,*
- c *the design and layout of the development shall take account of the location of the railway line crossing the Site,*
- d *housing shall be designed around a Linear Park which follows along the Lidsey Rife,*
- e *A comprehensive strategy for surface water management will be developed in line with specific recommendations for this locality, in the Arun Strategic Surface Water Management Study;*
- f *significant views to and from the South Downs shall be incorporated within the Site,*
- g *provide a Community Hub which has been designed and will include;*
 - i *new well-connected local centre, with connections to the train station at Barnham,*
 - ii *the location and scale of the local centre shall support and respect the relationship with existing facilities within the six villages area;*
 - iii *new retail, commercial and community facilities*
 - iv *new Tier 7 library facility; and*
 - v *healthcare facilities to serve BEW (SD5) and Fontwell (SD6)*
- h *transport requirements including:*
 - i *a new A29 route through the allocation which provides all necessary linkages and routing between the A259 (Bognor Regis Relief Road) to the south and A27 to the north and includes a bridge over the railway to the east of the current Woodgate crossing. The construction of this new route will be regarded as not only mitigating the effect of additional development traffic from the strategic Site, but also providing significant additional benefits to the primary local road network and reducing the potential for future congestion in the wider area. In the event that the any landowner delays the delivery of the route and/or does not reasonably make available part or all of the route then Arun District Council will utilise Compulsory Purchase Order powers to deliver the entire route of the road from the A29 Fontwell Avenue in the north to the A29 Lidsey Road in the south;*

- ii provision of an east-west route north of the railway line that will join the existing A29 route to the new A29 route and continue eastwards to Barnham railway station;*
- iii access to Barnham railway station shall be maximised through the provision of direct and attractive routes for all transport modes including additional car parking to serve facilities in Barnham's centre including at the railway station;*
- iv regular bus services linking BEW with Bognor Regis (A29 route) and local facilities and employment; and*
- v Westergate Link cycle scheme, in addition to further cycle routes to/from Bognor Regis and linkages,*
- i provide a new two-form entry primary school, a new one-form (expandable to two-form) entry primary school and nursery places,*
- j incorporate two new sports pitches and changing facilities, and*
- k incorporate planned new employment provision.*

2.11 The Framework Masterplan forms the first stage in the masterplanning process for the site allocation and will set the overarching principles for the development across all of the strategic allocation. The Framework Masterplan will provide details including land uses (e.g. housing, community and open space), where these will be located and the access points and key routes through the site.

2.12 The site which is the subject of this Scoping Request is located within the northern section of the wider strategic allocation south of Barnham Road (the 'Site').

Consultation

2.13 Consultation is ongoing with ADC in relation to the Site and the masterplan which is being developed for the whole strategic allocation. A number of pre-application meetings have been held with ADC, and public consultation is ongoing in relation to the wider Framework Masterplan.

2.14 Discussions are also underway with ADC and key consultees in respect of the key environmental aspects described in this EIA Scoping report. This information has been used to inform this scoping document.

Summary

2.15 The proposed development is one that falls within the remit of the 2017 EIA Regulations. It has been determined that an EIA will be conducted to ensure that the potential for significant effects can be assessed and mitigation and monitoring measures identified where required. The planning application for the BEW development will therefore be accompanied by an ES.

2.16 The development is being brought forward by the Church Commissioners for England and Hanbury Properties Limited (the Southern Consortium). The Site is identified as an appropriate location for strategic housing development and supporting infrastructure.

2.17 The remainder of this scoping report provides further detail on the Site, the development and the matters to be assessed as part of the EIA.

3.0 **Site Location and Description**

- 3.1 In accordance with the 2017 EIA Regulations, plans are attached identifying the site (Appendix 1). A scoping boundary has been identified for the purposes of this report which defines a maximum extent of land to which this EIA will relate. This area has been defined broadly at this time to allow flexibility in establishing the extent and form of development. The Site boundary to which the EIA will relate will be within this development Site boundary.

The Site and surroundings

- 3.2 Barnham, Eastergate and Westergate are in West Sussex, on the Sussex coastal plain east of Chichester, north of Bognor Regis, and north-west of Littlehampton. The three villages are located in close proximity to one another, separated by open agricultural land. The characteristics of the coastal plain define the area, namely low-lying fields divided by planting some watercourses linked to the Lidsey Rife.
- 3.3 An aerial photograph of the Site and immediate surroundings is provided below.

Figure 3.1 Aerial Photograph identifying Scoping Boundary



Source: JFP; Not to scale

- 3.4 The scoping boundary includes an area of approximately 120 hectares. The total area within the Strategic Allocation is circa 270 hectares which extends north of Barnham Road, Westergate Street and Lidsey Road to the west, and the existing settlement edge of Barnham to the east.
- 3.5 The site is currently and primarily in agricultural use.
- 3.6 The Site is located to the east of the A29 and is bound to the north by residential properties in Eastergate and Barnham. To the south the site is bound by agricultural land and the Site is divided across the centre, west to east, by the East Coastway railway line between Portsmouth and Brighton. In the northern part of the site the eastern boundary is adjacent to St Phillip Howard Catholic School and is bounded by agricultural land in the south. Lidsey oil field and a

Southern Water Waste Water Treatment Works are located to the south east of the site boundary.

- 3.7 The nearest railway station is Barnham Railway Station which is located approximately 1.5km from the centre of the Site, and runs frequent services to Chichester, Brighton, Southampton, London and Gatwick Airport. There are several bus stops around the periphery of the allocation Site, these are located along the A29 and B2233 Barnham Road, providing services to Bognor Regis, Chichester, Arundel and Walberton.
- 3.8 The northern part of the Site is approximately 300 metres from the A29, and the boundary meets the A29 at the southern area. The Site is also approximately 2km south of the A27.

Environmental and policy context

- 3.9 According to the Environment Agency (EA) Flood Map for Planning (Rivers and Sea) the majority of the Site is located in Flood Zone 1 (low probability of flooding). There are areas of Flood Zones 2 and 3 located along the course of the Lidsey Rife stream which runs through the Site north to south.
- 3.10 Three Conservation Areas lie close to the development Site:
- The Square Eastergate
 - Church Lane Eastergate (a small area also falls within the scoping boundary)
 - Church Lane Barnham
- 3.11 Remnants of the Portsmouth and Arundel Canal is present along the southern boundary of the Site.
- 3.12 There are no designated heritage assets located within the Site, however there are a number of listed buildings (Grades I, II and II*) located in the areas surrounding the Site, to the northwest along the A29 through Westergate, at Eastergate and to the east of the Site near to Barnham. Those heritage assets nearest to the Site boundary are summarised below:
- Group (south of Eastergate village centre): The Parish of St George (Grade II*); Manor Farmhouse; Granary/ Outbuilding at Manor Farm to the North West of the Farmhouse; Barn and Cart shed at Manor Farm to the South West of the Farmhouse; Eastergate House; The Wilkes Head Inn; and The Old House (all Grade II listed).
 - Group (east of Westergate village centre located along the A29): Milliards Manor Farmhouse; Timbers; and The Old Manor House (all Grade II listed).
 - Group (east of the Site, along Barnham Road / Barnham Lane, near to the Railway Station): Thimbles; Parsonage Farmhouse; and Luckham Cottage (all Grade II listed).
 - Group (southeast of the Site at Church Lane): Barnham Court (Grade I listed); The Parish of St Mary (Grade I listed); The Lodge of Barnham Court (Grade II listed); Manor Cottage (Grade II listed); The Street Cottage (Grade II listed); and Curacoa (Grade II listed).
- 3.13 Further Grade II listed buildings are located along the B2233 (Nyton Road/ Barnham Road) to the north of the Site.
- 3.14 The Site has direct views to the South Downs National Park to the north; the nearest boundary is approximately 2km to the north of the site (beyond the A27 trunk road).
- 3.15 There are no Air Quality Management Areas declared within the Arun District boundary.

4.0 Proposed Development

4.1 A hybrid planning application will be submitted in respect of the proposed development with detailed design of key infrastructure with the remainder of the development being in outline. A series of parameters will be established for those areas that will be in outline. The plans will provide a maximum envelope for the purposes of assessing a 'worst case scenario' in the EIA.

4.2 Design work is ongoing but the following details are sufficient to allow scoping of the EIA.

Form and scale of the development

4.3 The development will provide up to 1,500 dwellings. The dwellings will be a mix of type, size and tenure. Maximum building heights across the site will vary from between 12 metres (2.5 storeys) and 18 metres (4 storeys).

4.4 The development will also provide:-

- 1 Community facilities;
- 2 A local centre (shops and services);
- 3 A Primary school and associated playing fields; and
- 4 Early years provision (i.e. nursery).

Access

4.5 The following access will be designed in detail:-

- 1 phase 2 of the A29 realignment between Barnham Road to a new junction on the A29 south of Lidsey Bends;
- 2 an east-west route north of the railway line that will join the existing A29 route to the new A29 route and continue eastwards to Barnham railway station; and
- 3 a connection from the realigned A29 to the existing A29 through the Hanbury Properties land parcel (the 'Hanbury Spur').

4.6 There will also be a series of secondary routes through the site and linking to the existing road network in Eastergate. A network of new pedestrian and cycle links will run through the Site and connect it to the existing surrounding network.

Landscaping

4.7 A Linear Park will run north-south along the Rife valley accommodating informal landscape including watercourses, flora, fauna, pedestrian and cycle routes. A 'green ring' of natural, semi-natural spaces and activity will connect the eastern extents of the development back to the Linear Park.

4.8 Existing watercourses will be retained and integrated into the drainage strategy. A network of sustainable drainage features will work with existing topography and integrate with existing wetland features.

4.9 Proposed attenuation basins will be a combination of predominantly dry features with planting and some with permanent water to encourage and support biodiversity.

Sustainability

4.10 A sustainability strategy is being developed and those elements relevant to the EIA will be considered as part of the assessment. Key aspects of the strategy will include:

- Passive design and energy efficiency;
- Low and zero carbon technologies
- Smart management and demand side response
- Use of sustainable transport modes
- Consultation throughout the lifetime of the development with local residents and community groups
- Local procurement
- Measures to encourage an active and healthy population
- Climate mitigation and adaption
- Water efficiency

Construction and phasing

4.11 A construction and phasing methodology will be developed for the purposes of assessment. Construction is currently anticipated in phases and proceeding from the north and south. Indicative phases as currently envisaged for the proposed development Site are set out below:

- **Phase 1:**
 - East-west road connection
 - Primary school
 - Local centre
 - Linear park
 - Additional parking facilities to serve Barnham station
 - The first 1200 homes
- **Phase 2:**
 - Primary School delivery
 - Remainder of homes proposed within the application
 - Hanbury Spur

4.12 Construction of the A29 realignment is expected to take place in both phases.

Consideration of alternatives

4.13 Schedule 4 of the 2017 EIA Regulations requires a consideration of the main alternatives for the development which have been studied by the applicant and the main reasons for the choices which have been made, taking account of environmental effects.

4.14 Given that the development Site is allocated within the adopted local plan, and the proposed development is being brought forward in line with the strategic policy, the Applicant has not given, and will not be giving, consideration as part of the EIA to other sites for the development of a similar scale.

4.15 However, the EIA will include a review of:

- 8 The likely effects in the event that the development does not come forward ('the no development scenario'); and
- 9 Consideration of the evolution of the design of the scheme and whether alternative forms of development would achieve the same objectives.

4.16 The EIA team has been involved in the process of design iteration and emergence of the development. This process will be documented as part of the EIA.

Other development and cumulative effects

- 4.17 In accordance with the 2017 EIA Regulations, the EIA will include an assessment of any direct and indirect cumulative effects arising from the inter-relationship between different impacts arising from the development when considered alongside any other developments in the area surrounding the Site. The objective is to identify any combined impacts from the development or impacts from several developments; and if, whilst individually the impacts may be insignificant, could when considered together cause a further significant direct or indirect impact requiring mitigation.
- 4.18 In relation to other development, best practice dictates that cumulative assessments of this nature should have regard to those schemes which are 'reasonably foreseeable' (i.e. usually those under construction or with planning permission). The assessment is only capable of being carried out based on the information available at the time of assessment.
- 4.19 The assessment should focus only where there is the potential for significant cumulative impacts and, for this development, an initial review of potential developments requiring review has therefore focused on those developments which due to their proximity or scale are most likely to give rise to cumulative impacts. Consideration has also been given to the areas within which cumulative impacts are most likely. Applications which are currently under consideration and may be determined ahead or during determination of the proposed development have also been included for robustness.
- 4.20 The cumulative assessment will therefore include a review of the potential for impacts when the scheme is considered alongside the following developments:

Table 4.1 Suggested developments for the Cumulative Impact Assessment

Site address	Reference	Application description	Status
Land north of Hook Lane	P/30/19/OUT	Outline application with some matters reserved for the construction of up to 300 No. new homes, a care home of up to 80 beds, D1 uses of up to 4,000 sqm including a 2 form entry primary school, the formation of new means of access onto Hook Lane & Pagham Road, new pedestrian & cycle links, laying out of open space, new strategic landscaping, habitat creation, drainage features & associated ground works & infrastructure. This application may affect the setting of a listed building (resubmission following P/6/17/OUT).	Approved September 2019
	P/103/19/D OC	Approval of details reserved by condition imposed under reference P/30/19/OUT relating to Condition No 28 - archaeological.	Approved December 2019
Land South of Summer Lane &	P/140/16/OUT	Outline application for access only - mixed use development comprising of up to 400 dwellings, a care home with up to 70 beds, a Local Centre comprising up to 2000sqm of A1/A2/A3/D1/sui generis floorspace,	Approved November 2018

Site address	Reference	Application description	Status
West of Pagham Road		provision of land for a 1FE primary school (with sufficient space to ensure that it is expandable to 2FE), provision of land for a scout hut, safeguarding of land to help link the Site to the Pagham Harbour Cycle Route & other community uses including public open space & allotments with some matters reserved.	
Land North of Seftor Road & 80 Rose Green Road, Pagham	P/134/16/OUT	Outline application for the development of up to 280 dwellings (including affordable homes), land for a replacement scout hut, land for an Ambulance Community Response Post Facility and land for either a 1FE primary school or care home. Provision of a primary vehicular access from Seftor Road and demolition of No. 80 Rose Green Road and creation of a pedestrian and emergency only access. Provision of Public Open Spaces including associated children's play areas, landscaping, drainage and earthworks.	Approved October 2019
	P/24/20/RES	Approval of Reserved Matters pursuant to condition 1 (Reserved Matters details), condition 6 (Design Code Masterplan) and condition 7 (landscaping and layout details) following the approval of Outline planning permission P/134/16/OUT.	Awaiting decision
Church Barton House Horns Lane Pagham	P/25/17/OUT	Outline application with all matters reserved - Erection of up to 65 No. dwellings, access roads, landscaping, open space & associated works.	Approved September 2019
Land West of New Barn Lane Bersted	BE/77/16/OUT	Outline application with all matters reserved for up to 50 residential units, landscaping, amenity space, car & cycle parking, roads, service & drainage infrastructure & other associated works.	Allowed at appeal February 2018
	BE/113/17/RES	Approval of reserved matters following outline consent BE/18/17/PL for appearance, landscaping, layout & scale for a mix of up to 90No. residential units, associated open space, landscaping, access & car parking.	Approved December 2017
	BE/37/19/PL	Erection of 99 No. dwellings together with landscaping, open space & associated works. Access to be taken from New Barn Lane (alternative scheme to BE/29/19/PL).	Approved August 2019
	BE/103/19/RES	Approval of reserved matters following the grant of BE/77/16/OUT and BE/40/18/PL for 50 No. residential units with associated roads, drainage & other related infrastructure.	Approved April 2020
	BE/142/15/OUT	Outline application with some matters reserved for a mix of up to 90 No. residential units, associated open space, landscaping, access & car parking.	Approved February 2016

4.21

Discussions with the other developers involved in the delivery of the Strategic Allocation will continue and, should applications be submitted during the process of EIA, these will be considered as part of the EIA. The team are also monitoring the submission of an application for land North of Chalcroft Lane, West Bersted which has been the subject of an EIA screening process in May 2020.

- 4.22 If the authority is aware of any other proposals that it considers will need to be assessed in terms of potential cumulative impacts, it would be appreciated if these could be identified as part of the EIA scoping opinion.

5.0 **Transportation**

- 5.1 Pell Frischmann will prepare the Transportation chapter of the ES. The chapter will consider the potential effects in the vicinity of the development which could arise on the transport network and which are attributable to changes in predicted travel demand associated with the Proposed Development during both the construction and operational phases.
- 5.2 A Transport Assessment (TA) will be undertaken and information will be used from that document to inform the transport chapter of the EIA. The chapter will draw out and expand upon details from the TA. The TA will contain more detailed operational analyses regarding the determination and assessment of travel characteristics associated with the development, particularly in respect of the peak hour effects and will draw on transport modelling. The TA will be appended to the ES.
- 5.3 A TA scoping note and a transport modelling note (Appendix 2 to this scoping report) are currently being reviewed with consultees including:
- ADC;
 - WSCC as the Local Highway Authority; and
 - Highways England (HE) for matters concerning the Strategic Road Network (SRN).
- 5.4 A Framework Travel Plan (FTP) will be prepared for the residential component of the development. This will set out the overarching objectives for the scheme, including action plan measures and preliminary targets.

Legislative and policy context

- 5.5 The current agenda regarding transport and development is moving away from one of providing significant new highway capacity, through 'predict and provide' schemes. Instead, policies have been adopted in national guidelines that seek to encourage the use of more sustainable modes of transport than the car, and a planning system which places more emphasis on the link between transport and land use planning policies. The documentation to be reviewed will include the following:
- The Government's National Planning Policy Framework (NPPF) (June 2019);
 - National Planning Policy: Planning Practice Guidance (March 2014);
 - The Department for Transport's Circular 02/2013 The Strategic Road Network and the Delivery of Sustainable Development;
 - National Planning Policy: The Strategic Road Network (SRN): Planning for the Future (2015); and,
 - Local Planning Policy: Arun Local Plan (2011-2031).

Current Conditions

- 5.6 A review of the existing, or baseline, transport conditions, including public transport, walking, cycling, and highway conditions, in line with WSCC's TA Guidance has been undertaken. This study has been carried out to ensure that baseline conditions are accurately established so that the context of the proposed development at the Site, and its potential impact on the surrounding transport network, can be fully understood. The following content summarises the findings of this review.

- 5.7 The Site is located to the east of the existing A29 between Westergate, Eastergate and Barnham. It is bound to the north and west by residential properties in Westergate, Eastergate and Barnham, to the south by agricultural land and to the east by the railway line between Barnham and Bognor Regis. The Site is divided across the centre west to east by the East Coastway railway line between Portsmouth and Brighton.
- 5.8 The streets around the northern boundary of the Site are predominantly residential in character and largely benefit from footways and street lighting. These streets form part of the existing local pedestrian network, which assists the movement of pedestrians between the three villages.
- 5.9 Several key services and facilities are located within a 20-minute walk (1.7km) of the Site and are accessible using the existing local pedestrian network. This includes a community centre (village hall), nurseries, primary and secondary schools, local stores, medical centres, places of worship, post office, dentists, sports clubs, a local centre, and several public parks.
- 5.10 Cycle access to the Site can be gained from Lidsey Road, Woodgate Road, Orchard Gardens, Old School Place, Barnham Road and Gospond Road.
- 5.11 The centre of Bognor Regis is located within 7km of the Site, which is a key employment and amenity hub for the area. Bognor Regis can be accessed in approximately 30 minutes by cycling. The centre of Chichester is located within 10km of the Site and is another key employment and amenity centre within the area. Chichester can be accessed in approximately 40 minutes by cycle.
- 5.12 There are several bus stops around the periphery of the Site, these are located along the A29 and B2233 Barnham Road. These bus stops are provided with either bus shelters or a standalone post and flag with some stops also providing timetable information. Barnham Railway Station is located approximately 1.5km from the centre of the Site and has a frequent service to numerous local and regional destinations, including Chichester, Brighton, Southampton, London and Gatwick Airport.
- 5.13 The surrounding highway network comprises the A29, A259 and Barnham Road. Nyton Road and the A29 provide access to the A27 (T), which is part of the strategic trunk road network managed by HE.
- 5.14 In addition to the above initial traffic modelling was undertaken in 2016 as part of the site promotion within the local plan; the assessment was undertaken using traffic flows derived from the Arun Transport Study (ATS) commissioned by ADC. Subsequently the BEW site was allocated within the ADC Local Plan, which also sets out the proposed realignment of the A29 which passes through the BEW development.
- 5.15 To inform the phasing of the BEW development and associated infrastructure, a Trigger Point Modelling assessment was undertaken by WSP on behalf of WSCC using the updated 2017 Chichester Area Transport Model (CATM). The CATM is a SATURN model and was recently updated to inform the business case for the A29 realignment scheme which was completed in February 2019. This included a refined zone system and road network to cover the BEW development. The base year model network was calibrated and adjusted where appropriate. Once the calibration was complete the model flows and journey times were compared with observed data to validate the model. The results of this fulfilled the DfT WebTAG model validation criteria. Full details of this are available in the A29 Local Model Validation Report (October 2018).
- 5.16 Forecast year models were developed for the years of 2023 and 2038 to represent the year of the A29 opening and design year respectively. Further information on the forecast models is available in the A29 Realignment Traffic Forecasting Report (January 2019).

- 5.17 The trigger point modelling considered six development and infrastructure scenarios and assessed the performance of the junctions using the strategic model outputs. These were:
- Scenario 1: Cala development site via a road connection to the existing A29, and 350 dwellings.
 - Scenario 2: Cala development site plus development on sites within both the northern and southern consortium land ownership. Road connections onto the existing A29 (Cala) and south (Pye Homes) of the level crossing and at Barnham Road (both northern and southern consortium parcels). 1,250 dwellings included for the BEW development.
 - Scenario 3: Cala development site plus development on sites within both the northern and southern consortium land ownership. Road connections into the existing A29 and Barnham Road plus the northern section of the new link road between the A29 and Barnham Road. 1,250 dwellings included for the BEW development.
 - Scenario 4: Cala development site plus development on sites within both the northern and southern consortium land ownership. Road connections into the existing A29 and Barnham Road plus the northern section of the new link road between the A29 and Barnham Road, and Barnham Road through a road link into the Cala site. 1,875 dwellings included for the BEW development.
 - Scenario 5: Cala development site plus development on sites within both the northern and southern consortium land ownership. Road connections into the existing A29 and Barnham Road plus the northern section of the new link road between the A29 and Barnham Road. Barnham Road through a road link into the Cala site, plus the section across the railway and connecting through sites R11 and R12. 2,330 dwellings included for the BEW development.
 - Scenario 6: Full build out of the development and completion of the north-south link road, and east-west connections. 4,180 dwellings included for the BEW development.
- 5.18 The trigger point modelling showed that the majority of the assessed highway network would operate within capacity, but also identified the junctions that would be most impacted by the development. The conclusions of the study outlined that further strategic and junction modelling will be required as part of the planning application. The TA for this application will use turning flows extracted from an updated A29 CATM model to undertake local junction capacity testing.
- 5.19 Receptors will be identified within the chapter through the initial study area investigations. However, it is anticipated that the following receptors may be identified:
- local road network and junctions;
 - existing footpaths and cycleways;
 - site users and accessibility;
 - public transport; and,
 - road safety.

Methodological Approach

- 5.20 As noted above consultation undertaken to date includes formal discussions with:
- ADC;
 - WSCC as the Local Highway Authority; and,
 - HE for matters concerning the SRN.

- 5.21 It is anticipated that the strategic modelling for the project will utilise an updated A29 CATM model, as the basis for assessment, amended to include infrastructure associated with the development at the Site and most up-to-date information on committed developments.
- 5.22 The TA will require outputs from the strategic model to inform the operational assessments that will be undertaken at the key junctions within the local highway network. These standalone assessments will use the Transport Research Laboratory's (TRL) PICADY and ARCADY junction modelling modules, contained within the JUNCTIONS9 package, at the priority and roundabout junctions within the agreed study area. The JCT Consultancy computer modelling package LinSig 3.2 will be used to assess the operational capacity of any signalised junctions within the agreed study area.
- 5.23 For the purpose of the ES, the assessment to be presented will take into account the legislative and policy context noted above, both directly and through the scoping process. It will be informed by current best practice, including that evolved from the Institute of Environmental Assessment (IEA) document 'Guidance Notes No. 1: Guidelines for the Environmental Assessment of Road Traffic', 1993.
- 5.24 The assessment methodology to be included in the ES will address the following:
- 5.25 **Baseline characteristics** - The study area for assessment in this Chapter will be based on the outcome of scoping activities with WSCC, ADC and H.E. However, the junctions forming a likely area of assessment has been provided in Table 5.1.

Table 5.1 Potential junctions to be assessed

Junction number	Junction name
1	A27/ Fontwell Avenue
2	Fontwell Avenue/ Eastergate Lane
3	Fontwell Avenue/ Barnham Road
4	Barnham Road/ Lake Lane
5	Nyton Road/ Westergate Street
6	Nyton Road/ Oving Road
7	Westergate Street/ Hook Lane
8	Shripney Road/ Charles Purley Way
9	Shripney Road/ Rowan Way
10	Fontwell Avenue/ A29 realignment
11	Barnham Road/ A29 realignment
12	Lidsey Road/ A29 realignment
13	Nyton Road/ A27
14	Westergate Street/ Northern access road
15	Lidsey Road/ Southern access road
16	Whyke A27/ B2145 (Whyke Roundabout)
17	A27/ A259 (Bognor Road Roundabout)
18	A27/ A29 (Fontwell Eastern Roundabout)
19	A27/ A284 Ford Road
20	A27/ The Causeway

Note: junctions 10, 11, 12, 14 and 15 will only be considered in the forecast year do something scenarios as these relate to new roads being built as part of the development proposals.

- 5.26 **Assessment scenarios** – Assessment of the effect of the development will be made by comparing pairs of future scenarios; one in which the development is delivered (in part or in

full), and the other in which the development is assumed not to occur. These are described as “Do Something” and “Do Minimum”. The difference between the scenarios will allow the identification of the net effect of the development to be identified in the context of the general and wider changes expected in the area over the period of assessment.

5.27 Additionally, assessment will be undertaken to review the temporary effects of the development during the construction process.

5.28 It is anticipated that the effects will be determined for the following assessment scenarios:

- Do minimum modelling:
 - a Do minimum future year 2031: background growth + committed developments + wider infrastructure changes + other local plan developments and associated infrastructure; and,
 - b Do minimum future year 2038: background growth + committed developments + wider infrastructure changes + other local plan developments and associated infrastructure.

- Do Something Modelling:

Outline part of hybrid planning application

- Development north of the railway:
 - a Do something year 2031: background growth + committed developments + wider infrastructure changes + other local plan developments and associated infrastructure + BEW development + BEW infrastructure
- Development north of the railway (without Cala development and east-west link open):
 - a Do something year 2031: background growth + committed developments (not including Cala site) + wider infrastructure changes (east-west link not connected to existing A29) + other local plan developments and associated infrastructure + BEW development + BEW infrastructure

Detailed part of hybrid planning application

- A29 realignment and full development build out:
 - a Do something year 2038: background growth + committed developments + wider infrastructure changes + other local plan developments and associated infrastructure + BEW development + BEW infrastructure

5.29 It should be noted that the scenarios presented above will be consistent with those assessed in the Transport Assessment.

5.30 **Local highway network and existing traffic** - Effects on the local highway network due to traffic changes will be assessed in the context of the individual assessment items. The anticipated effects of any traffic changes will be considered in detail through modelling, rather than a pure assessment of numerical change as is IMEA Guidance¹.

5.31 **Pedestrian movement, capacity and delay** - The significance of increased pedestrian flow will be assessed using professional judgement in conjunction with the TRICS assessment and mode share estimates produced as part of the Transport Assessment.

¹ IMEA guidance indicates that changes in traffic flow below 30% are not significant. However, this does not consider the relative impact of such a change on the type of link concerned; e.g. a 31% increase in a very low flow might still be very low but a 29% increase on a busy motorway might be of great impact.

- 5.32 **Pedestrian severance, fear and intimidation** - Significance thresholds for assessing severance will be based on the range of indicators referred to in the IEMA Guidelines where changes in traffic flow of 30%, 60% and 90% are regarded as producing "slight", "moderate" and "substantial" changes in severance respectively. The IEMA Guidelines will be referenced to assess any increase in fear and intimidation.
- 5.33 **Cycling facilities** - The effect upon cycle facilities will be assessed using professional judgement.
- 5.34 **Public transport** - Professional judgement will be used to assess the effect of the additional trips on the bus and rail networks.
- 5.35 **Junction capacity and driver delay** - The assessment of the junction capacity in the local road network will be undertaken via quantitative modelling using specialist traffic junction modelling software.
- 5.36 **Road traffic collision and safety data** - Professional judgement will be used to assess the significance of the Proposed Development on road safety.

Significance Criteria

- 5.37 The assessment process will identify the potential effects pre-mitigation that may arise as a result of the development. It will subsequently identify appropriate mitigation measures, and consider the changes (i.e. the residual effects) that are predicted to take place to the existing condition of the environment as a result of the development.
- 5.38 Guidance provided by the IEMA and the Department for Transport (DfT) have been consulted in order to identify the significance criteria applicable to the assessment. For a number of residual effects, there are no established thresholds of significance, in which case interpretation and professional judgement will be applied based on prior knowledge of the Site or quantitative data where available.
- 5.39 In the assessment of transport effects, 'significance' often arises where the effect of a development causes infrastructure demand to approach or exceed the capacity available. With regard to roads this may relate to link capacity, or as is more common, junction capacity. More widely, public transport capacity, pedestrian infrastructure capacity and cycle infrastructure effects may be of concern.
- 5.40 Transport effects may be either beneficial or adverse, apply in the short, medium or longer terms and be either temporary or permanent:
- Beneficial effect – One that is generally considered a positive aspect for users, receptors and/or the environment, such as a reduction in motor vehicle traffic or an improvement in the sustainability of transport undertaken;
 - Adverse effect – One that is generally considered to be a negative aspect for users, receptors and/or the environment, such as an increase in motor vehicle traffic or a degradation in the accessibility of a site;
 - Short term – Of limited (i.e. temporary) duration that does not last for a majority of the period of construction (i.e. substantively less than 5 years);
 - Medium term – Of limited (i.e. temporary) duration in the order of the majority (or all) of the period of construction (i.e. in the order of 10 years); or,
 - Long term – Of indefinite duration, i.e. extends beyond the period of construction and can be considered either practically or actually permanent.

5.41 The magnitude for assessing an effect will be characterised as either:

- Major – Total loss or major/ substantial alteration to key elements / features of the without development conditions such that due to the proposed development, character / composition / attributes will be fundamentally changed. These effects will usually be of measurable effect and may be expected to have a substantive impact on the capacity and / or capability of existing / proposed infrastructure;
- Moderate – Loss or alteration to one or more key elements / features of the without development conditions such that due to the proposed development, character / composition / attributes will be materially changed. These effects will usually be of measurable effect and may be expected to have a noticeable impact on the capacity and / or capability of existing / proposed infrastructure;
- Minor – A minor shift away from without development conditions. Change arising from the loss / alteration will be discernible / detectable but not material. The underlying character / composition / attributes of the without development condition will be similar to the without development circumstances / situation. These effects will usually be of measurable effect but would be expected to be substantially within the capacity and / or capability of existing / proposed infrastructure; or,
- Negligible – Very little change from without development conditions. Change barely distinguishable, of no consequence, or approximating to a 'no change' situation. Effects would be within the range of daily variation.

5.42 As well as the significance criteria, 'Sensitive Receptors' are also key in determining the significance of the transport effects of a new development. The sensitivity of a receptor is based on a number of factors such as the vulnerability or activity of the user. The IEMA Guidelines for the Environmental Assessment of Road Traffic document will be used to consider the sensitivity and significance of traffic changes. This includes guidance on how the sensitivity of receptors should be assessed. Using that as a base, professional judgement will be used to develop a classification of sensitivity for various receptors. This is summarised in Table 5.2.

Table 5.2 Classification of Receptor Sensitivity

Sensitive Receptor	Negligible	Low	Medium	High
Location - Local Settlements	Individual dwellings or scattered settlements with no facilities	Small rural settlement, few community or public facilities or services	Intermediate sized rural settlement, containing some community or public facilities and services	Large rural settlement containing a high number of community and public services and facilities
Road network and associated users	Roads with no adjacent settlements including new strategic trunk roads that would be little affected by additional traffic and suitable for abnormal indivisible loads	Little or no traffic calming or traffic management measures	Some traffic calming or traffic management measures	Traffic control signals, waiting and loading restrictions, traffic calming measures
Road structure and classification	New strategic trunk road	Trunk or A-class road, constructed	Local A or B class roads, capable of	Minor rural roads, not constructed to

Sensitive Receptor	Negligible	Low	Medium	High
	junctions capable of accommodating abnormal indivisible loads	to accommodate significant HGV composition	regular use by HGV traffic	accommodate frequent use by HGVs

5.43

The IEMA Guidelines identify the key impacts that are most important when assessing the magnitude of traffic effects from an individual development: Table 3.4N of LA 104 Environmental assessment and monitoring (HE, 2019). Design manual for roads and bridges 11.2.5. (DMRB) entitled, Magnitude of impact and typical descriptions, sets out five levels against which the magnitude of change should be assessed - major, moderate, minor, negligible and no change. This is summarised in Table 5.3.

Table 5.3 Magnitude of impact and typical descriptions

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

5.44

The criteria assessed will include Severance, Driver Delay, Pedestrian Delay, Pedestrian Amenity, Fear/Intimidation and Accidents and Safety. To determine the overall significance of the effects, the results from the receptor sensitivity and magnitude of change are correlated and classified using a scale set out in Table 3.8.1 of LA 104 Environmental assessment and monitoring (HE, 2019). DMRB 11.2.5. and summarised in Table 5.4.

Table 5.4 Significance Matrix

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

Anticipated Effects

5.45

Table 5.6 and Table 5.7 present a summary of the scoping process, identifying which likely environmental impacts with respect to transport will be assessed in the ES (i.e. considered potentially significant and therefore scoped in) and those which are not assessed further.

Table 5.6 Construction phase impacts

Potential impact	Assess in EIA?	Reasoning behind scoping decision
Impact of construction traffic (site workers and movement of construction material on the local road network).	Yes	The construction phase will increase the number of vehicles, including heavy goods vehicles (HGV's), on roads surrounding the Site.
Impact of construction traffic on local air quality, noise and vibration.	Yes	The impact of traffic on air quality, noise and vibration will be assessed as detailed in the respective sections.

Table 5.7 Operational phase impacts

Potential impact	Assess in EIA?	Reasoning behind scoping decision
Increased traffic flows – impact on local road network, particularly key junctions – potential delays and congestion.	Yes	The proposed development will increase the number of vehicles, including HGV's, on roads surrounding the Site.
Impact on road safety.	Yes	The proposed development will increase the number of vehicles and may impact road safety.
Impact on public transport.	Yes	There will be a need to consider public transport provision to the Site.
Impact on pedestrian and cycle routes around the Site.	Yes	While it is expected that the majority of external trips will be made by vehicle, there will be a need to consider pedestrian and cycle access to the Site.
Impact on accessibility and severance.	Yes	There will be a need to assess the future accessibility of the Site from the surrounding area for Site residents.
Potential impacts with respect to local air quality, noise and vibration.	Yes	The impact of traffic on air quality, noise and vibration will be assessed as detailed in the respective sections.

5.46 Particular consideration will be given within the EIA assessment to changes to the local highway network traffic flows and associated implications for drivers, pedestrians and road safety.

5.47 Receptors will be identified within the chapter through the initial study area investigations. However, it is anticipated that the following receptors may be identified:

- local road network and junctions;
- existing footpaths and cycleways;
- site users and accessibility;
- public transport; and,
- road safety.

Potential Mitigation

5.48 Where mitigation is required, these measures will be identified. Should junction capacity need to be increased in order to cater for the traffic flows generated by the proposed development, or to cater for safe pedestrian/ cycle movements, then 1:500 scale plans of the appropriate highway improvements will be provided. Any amended junction arrangements will also be assessed to ensure that they are appropriate.

5.49 In addition to the above a Framework Travel Plan setting out the potential measures that could be considered appropriate for the development during the operational phase will be produced to assist in mitigating the effects of development related traffic. This is likely to include the provision of information covering non-car travel opportunities and other appropriate measures in accordance with best practice guidance.

5.50 During the construction phase, a Construction Traffic Management Plan (CTMP) will be developed as a framework document.

Summary

5.51 The ES assessment will comprise the methodology set out within this chapter, with the results setting out the magnitude of change, sensitivity of receptor and the significance of effect on the local highway network, thereby detailing the environmental impact of the development in regard to road traffic.

6.0 Landscape and Views

- 6.1 The Landscape and Visual Impact chapter of the ES will be prepared by fabrik Chartered Landscape Architects. It is considered that due to the scale of the proposed development that this topic is scoped in.
- 6.2 ADC has been being consulted on the location of proposed photo representative key viewpoints (see Appendix 3) that will form the basis of the visual impact assessment. A total of 21 viewpoints were identified from a range of locations and distances from the Site. The numbers of the viewpoint locations have been amended since initial discussions.
- 6.3 As part of this scoping process, ADC is being consulted on the methodology to be used for the LVIA, which is also included in Appendix 3.

Current Conditions

- 6.4 The desk-top baseline and an initial site visit were carried out in May 2020. Further site work is to be carried out over the coming months, including a night time character assessment.
- 6.5 Published landscape character assessments covering the Site and its context will be referred to within the LVIA. At the national scale, the Site lies within Natural England's National Character Area (NCA) 126 'South Coast Plain'. This NCA stretches from the edge of Southampton in the west to Brighton and Hove in the east. The Sussex Historic Landscape Characterisation Project (2010) provides a further tier of assessment relative to the coastal plain and has been used as a tool to prepare the 'South Coast Plain local distinctiveness guide'. At the regional scale, the Site lies within Landscape Character Area (LCA) SC9 Chichester to Yapton Coastal Plain within the West Sussex Landscape Character Assessment (2003) which is to be read in conjunction with the landscape guidelines set out in A Strategy for the West Sussex Landscape (October 2005), which characterises the area encompassing the Site as the Chichester to Yapton Coastal Plain Landscape Character Area. The Site shares a number of key characteristics with this LCA.
- 6.6 The Arun Landscape Study (2006) includes a landscape character assessment of the district. The study has attributed the following landscape character types to the area encompassing the Site:
- L10a – Glass houses
 - L1a – Large-scale enclosed arable farmland
 - L1b – Large-scale open arable
 - L2 – Medium/ small scale arable
 - L3 – Coastal Plain enclosed pasture
 - M1 – Mobile home/ caravan park
 - V4 – Narrow, pronounced valley
- 6.7 The Site lies within the following Landscape Character Areas:
- 11. Lidsey Coastal Plain (low / medium landscape capacity)
 - 14. Westergate Eastern Fringe (low / medium landscape capacity)
 - 17. Westergate- Barnham Coastal Plain (low/ medium landscape capacity)
- 6.8 The Landscape Capacity of Strategic sites in Arun District (February 2017) study concludes that the main bulk of the core of the Site has a low landscape capacity, with outlying areas being of low-medium capacity. Notwithstanding this, a wider area than the red line area proposed for

consideration in this Scoping Report has subsequently been taken forward and where the Site lies within a development allocation in the Local Plan.

- 6.9 The Site is located to the east of the A29 and is bound to the north by residential properties in Eastergate and Barnham. To the south the site is bound by agricultural land and the Site is divided across the centre, west to east, by the East Coastway railway line between Portsmouth and Brighton.

Site landscape

- 6.10 The Site comprises large and medium sized agricultural fields (which are laid to range of crops); plant nursery buildings adjacent to Barnham Road; and the medium sized linear meadows which follow the Lidsey Rife watercourse. New Barn, which comprises a barn and courtyard contained by low buildings and / or a wall lie to the south of the Arundel to Chichester railway line and on the edge of the Site boundary. The southern part of the Site traverses a number of fields and a small reservoir. Despite being largely rural in nature, the land north of the railway lines is influenced by the adjacent settlement edges and the railway corridors that pass through the landscape locally.

- 6.11 fabrik will also be preparing a Site level landscape character assessment, drawing on existing information from the Arun District Council Local Plan evidence base, which is to be agreed with officers as part of the consultation process.

Designations

- 6.12 There are no landscape designations at the local, regional or national scale that cover the Site. Part of the north-western Site boundary abuts the Conservation Area on the edge of Eastergate. The closest boundary edge to the South Downs National Park is located approximately 2km to the north of the Site. The rising landform and ridgeline of the South Downs can be seen in the distance to the north.

Methodological Approach

- 6.13 The LVIA will be undertaken in accordance with the principles set out by the Landscape Institute and Institute of Environmental Management and Assessment in the Guidelines for Landscape and Visual Impact Assessment, Third Edition (2013) and guidance on Landscape Character Assessment produced by the Countryside Agency (now Natural England) and Scottish Natural Heritage (2002).
- 6.14 The photography, alongside any Verified Visual Montages (VVMs) will be prepared in accordance with Technical Guidance Note 06/ 19 on Visual Representation of Development Proposals (Landscape Institute, 17 September 2019). The methodology to be adopted for this project is set out at Appendix 3. Conclusions on effects, whether adverse or beneficial, are drawn from the separate judgements on the sensitivity of the landscape and visual receptors and the magnitude of the effects. This overall judgement involves a reasoned professional overview of the individual judgements against the criteria to make the final overall judgement.
- 6.15 For this assessment, the following descriptive thresholds will be used with regard to the significance of landscape and visual effects (which will be assessed separately):-
- Substantial: A significant change to the landscape elements, key characteristic features and perceptual qualities; Major change to a static open or partial view.
 - Moderate: Some change to the landscape elements, key characteristic features and perceptual qualities. Moderate or major change to static or kinetic, partial view.

- Minor: Some change to the townscape elements, key characteristic features and perceptual qualities; Minor change to a static or kinetic, partial or glimpsed view.
- Negligible: Where the proposals would have no discernible deterioration or improvement in the existing baseline situation in terms of landscape elements or view.
- Neutral: Where the proposals would result in no change overall (resulting in no net beneficial or adverse effect).

6.16 Finally, a judgement will be reached based on the assessment, whether an effect is beneficial or adverse.

6.17 The landscape and visual effects will be co-ordinated with the effects described in the cultural heritage chapter. A lighting assessment will be appended to the ES and effects during the night-time will be considered in this chapter as appropriate.

Anticipated Effects

6.18 There will be a number of landscape and visual receptors which could potentially be affected by proposed development on the Site. Those identified to date are highlighted below. Further receptors may be identified as part of the ongoing assessment work.

Landscape impact

- The land use of the Site;
- The landscape character of both the Site and its broader contextual environment. This will include consideration of any effects upon the existing key characteristics, as set out in published Landscape Character Assessment;
- The effects on the night-time character;
- The characteristic landscape features of the Site, including trees and hedgerows.

Visual impact

6.19 The plan at Appendix 3 identifies the locations of proposed key representative viewpoints that will form the basis of the visual impact assessment. The following visual receptors will be assessed:

- Residents - including those in properties surrounding the Site on the edge of Westergate, Eastergate, Barnham and Woodgate. This will also include residents at farmsteads (such as Headhone Farm and Manor Farm); those at Woodgate Caravan Park; and other residents of properties in the wider area with potential views towards the proposed development.
- Users of Public Rights of Way (PROW) (including those within the Site alongside recreational users in the South Downs National Park);
- Visitors to St George's Church in Eastergate and the plant nurseries on Barnham Road;
- Workers at existing employment and commercial facilities (such as Schools, Horticultural Nurseries and businesses along Barnham Road, the Southern Water treatment works, equestrian and farm workers);
- Users of the surrounding roads; and
- Those receptors at visitor attractions / scenic viewpoint such as Halnaker Windmill and The Trundle (Due to distance from the Site, it is anticipated that any effects on visual amenity would be negligible).

- 6.20 All of these receptors and any other subsequently identified will be assessed by the impact assessment process.
- 6.21 The proposed development may give rise to environmental effects on landscape and visual amenity receptors within the LVIA study area. These impacts will be given consideration as part of the design process to ensure that significant effects are avoided or mitigated as far as possible. The following landscape and visual effects are anticipated to occur during the construction and operation of the proposed development:
- Impacts on the topography, land use and landscape features and elements (physical impact) of the Site;
 - Impacts on the landscape character of Chichester to Yapton Coastal Plain due to changes in key characteristics, including landscape elements and features.
 - Impacts on the character of the Site and surrounding landscape character areas due to changes in views from these areas.
 - Changes in the range of views experienced by people within the LVIA study area.
 - Changes in the views within and out of the area.
- 6.22 It is anticipated that no significant impact upon visual amenity and character of the view will occur beyond the immediate context of the Site, due to a flat open landscape combined with the screening effect of the existing settlement edge in combination with existing and proposed vegetation.

Potential Mitigation

- 6.23 In built (primary) mitigation such as building heights, location and extent of green infrastructure, together with standard construction management practices for avoiding and reducing environmental effects will be taken into account. Additional (secondary) mitigation measures such as the building materials, elevational treatments and design quality will also be taken into consideration.

Summary

- 6.24 There are no landscape designations which cover the Site and the Site lies within land identified as a strategic allocation in the Local Plan. The most significant landscape and visual effects are predicted to occur on:
- the topography, land use and landscape features and elements (physical impact) of the Site;
 - the landscape character of Chichester to Yapton Coastal Plain due to changes in key characteristics, including landscape elements and features;
 - the key characteristics of character areas 11. Lidsey Coastal Plain, 14. Westergate Eastern Fringe and 17. Westergate-Barnham Coastal Plain;
 - the character of the Site itself and therefore the changes to the setting to the landscape character areas beyond the Site; and
 - the range of static and transient views experienced by people both within the Site and the immediate local area of the Site.

7.0 Ecology

- 7.1 The Ecology chapter of the ES will be prepared by Ecology Solutions.
- 7.2 In terms of Ecology, the large majority of Site is of negligible interest, with it being dominated by very large arable fields. These fields are subject to an intensive management regime with very narrow field margins. That said, other habitats present within the Site include a network of hedgerows and treelines, small wooded areas, grassland and waterbodies. These are of relatively greater ecological value, and provide opportunities for faunal groups; however, none of these are considered to represent 'irreplaceable' habitat from an ecological perspective.
- 7.3 The stream which flows along the western boundary is the habitat of (comparatively) greatest value within the Site. This feature supports a variety of marginal and aquatic species, in addition to a population of Water Voles *Arvicola amphibius*. The large barn located in the centre of the Site to the south of the railway line also supports roosting Barn Owl *Tyto alba*.
- 7.4 Further species and groups recorded within the Site and local area include an assemblage of breeding birds, foraging and commuting bats, common reptiles and Badgers. Due to the current management regime at the Site, opportunities for these species / groups are largely limited to the stream corridors and/or hedgerows which pass through the Site, with the arable land providing few, if any, opportunities.
- 7.5 Whilst the majority of the Site is of negligible interest, given the size of the Site and the presence of protected species and the habitat features that support them, and that there is potential for these species to be affected by the project, it is considered that the Site should be scoped in for EIA in terms of Ecology on this basis.

Current Conditions

- 7.6 A suite of ecological survey work has been undertaken at the Site between 2018 and 2020, with a limited number of surveys still to be completed.
- 7.7 A summary of the scope of ecological surveys that have been undertaken so far and the findings of these surveys, along with identification of further surveys that are required to be undertaken are detailed below.

1 Desk Study:

- 7.8 In order to compile background information on the Site and its immediate surroundings, Ecology Solutions contacted Sussex Biodiversity Record Centre (SBRC) in September 2018. Further information on designated Sites from a wider search area were obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC) database.
- 7.9 The desk study exercise carried out in 2018 did not identify the presence of any statutory or non-statutory designated sites of nature conservation interest within or adjoining the Site. The Brooks Local Nature Reserve (LNR), located approximately 800m to the south of the Site, is the closest statutory designated site, which supports a range of habitats including meadows, reedbeds, ponds and an extensively newly planted floodplain woodland. Fontwell Park Racecourse Local Wildlife Site (LWS), situated approximately 1.2km to the north, is the closest non-statutory designated site, which supports species-rich calcareous grassland.
- 7.10 The nearest European designated site is the Solent and Dorset Coast Special Protection Area (SPA), which is located approximately 3.7km to the south of the Site at its closest point. The SPA was recently classified (in January 2020) on account of the presence of breeding Sandwich Tern, Common Tern and Little Tern. The Solent and Dorset Coast SPA has been identified as an area

of coastal water which represents important foraging and supporting habitat for these three bird species, which nest on coastal sites. This SPA is entirely maritime and is not underpinned by a Site of Special Scientific Interest (SSSI). The next closest European designated site is Pagham Harbour SPA / Ramsar Site / SSSI, which is located approximately 7.5km to the south-west of the Site at its closest point. This SPA is classified on account of the presence of wintering Dark-bellied Brent Geese and Ruff, in addition to breeding Little Tern and Common Tern.

2 Phase 1 Habitat Surveys:

- 7.11 Originally completed across the Site (including land beyond the redline boundary) in June 2018. To ensure a robust baseline, updated Phase 1 surveys were completed in 2020, including the land within the road corridor to the south of the railway line and the land within the Fleurie Nursery site to the north.
- 7.12 The Site is dominated by very large arable fields which are subject to an intensive management regime with very narrow field margins, which are considered to be of negligible ecological value. Other habitats present within the Site, including a network of hedgerows and treelines, small wooded areas, grassland and waterbodies, are of relatively greater ecological value, and provide opportunities for faunal groups; however, none of these are considered to represent 'irreplaceable' habitat from an ecological perspective. The habitat of comparatively greatest value within the Site is the stream which flows along the western boundary. This feature supports a variety of marginal and aquatic species, as well as supporting a range of protected and notable species.

3 Badger Surveys:

- 7.13 Originally undertaken in conjunction with the Phase 1 survey in June 2018, this is also being updated over the 2020 season.
- 7.14 The presence of two potential Badger setts was confirmed during the update walkover survey in March 2020, however given the limited number of entrances present, and that some were blocked with debris it is considered that they are likely to constitute outlier setts. Limited evidence to indicate Badger activity was recorded, in the form of mammal pathways in areas of scrub and off-site latrines to the south-east of the road corridor.
- 7.15 As such, it is considered that Badgers are in the area and are likely to utilise the Site for foraging and commuting. Whilst only an outlier sett has been recorded with limited evidence of activity (no main setts have been recorded), given the mobile nature of Badgers, it will be important to monitor Badger activity at the Site over the 2020 season and to ensure that there have been no new sett excavations in the intervening period. Given that the current road footprint passes over the outlier sett (as illustrated on Plan ECO1 at Appendix 4 of this report), this is a potential sensitive receptor and as such further survey work immediately prior to the construction of this road will be necessary to ensure Badger are not present within this sett.
- 7.16 Subject to the findings of updated surveys in due course, forthcoming works may require a NE Badger licence to facilitate elements of the proposals. The emerging development proposals would easily be able to accommodate any mitigation measures which may be required as part of this licence process (including an artificial sett in the unlikely scenario that this is required).

4 Bat Surveys:

- a Roosting Bat Surveys - Initial appraisal of buildings and trees with bat roosting potential undertaken in conjunction with the Phase 1 survey in June 2018 and have been updated in 2020. Emergence / re-entry surveys have been undertaken on the large Barn to the south of the railway line in June and July 2020 to determine its potential use by roosting bats.

- b Foraging / Commuting Bat Surveys - Transect surveys and static detector surveys completed across the Site each month between May and October 2018.

- 7.17 Transect and static detector surveys identified that the Site is utilised by a range of bat species for foraging and commuting, with the greatest level of activity recorded along the stream corridor. Activity was also recorded as being highly associated with treelines and hedgerows, whilst little activity was recorded within the balance of the Site, which is most likely due to the extent of intensively managed arable land and the lack of suitable linear features which bats utilise for moving through the landscape.
- 7.18 In addition, a complex of older farm buildings in the north of the Site and a barn with outbuildings in the centre provides potential opportunities for bats. Emergence and re-entry roost surveys for bats undertaken in June and July 2020 have not recorded the presence of roosting bats within the site barn in the centre of the Site (south of the railway).
- 7.19 Trees associated with the hedgerows and treelines along a number of field boundaries were identified to support features of potential value for roosting bats, including holes, cracks and a covering of dense ivy. The locations of trees identified as having bat potential in relation to the proposed road layout are illustrated on Plan ECO1.
- 7.20 Given that the current road footprint passes in close proximity to these trees they are potential sensitive receptors and as such further survey work, in the form of tree climbing and/or emergence surveys are recommended in the event these trees are to be removed.

5 Water Vole and Otter Surveys:

- 7.21 Completed of all suitable habitats within the Site (notably the stream along the western boundary) in July and October 2018, and May 2020.
- 7.22 Water Voles were recorded as being present within the stream along the western boundary of the Site. Evidence of this species, including Water Vole burrows, feeding remains and latrines were recorded along the stream to the south of the railway line, which activity being concentrated along the section to the east of the caravan park, although more scattered evidence was also recorded along the stream further towards the south.
- 7.23 The locations of Water Vole activity along the western stream are illustrated on Plan ECO1. Given the presence of this species, it is likely that suitable measures will need to put in place during construction of the road over this feature as detailed in the mitigation section below.

6 Breeding Bird Surveys:

- 7.24 Recently completed across the Site in early April, May and June 2020.
- 7.25 Breeding bird surveys quantify the significance of the breeding bird assemblage present at the Site. Three surveys have been undertaken to date, with the vast majority of bird activity was recorded to be associated with the treeline and hedgerow vegetation associated with field boundaries, and the stream corridor, and consists of common and widespread bird species. Cetti's Warbler, a species listed on Schedule 1 of the Wildlife and Countryside Act 1981, was been identified along the stream corridor to the west of the main site during all three surveys.
- 7.26 The barn supported two large nesting boxes at the time of survey, with fresh Barn Owl pellets on the ground underneath the boxes indicating current use. Additionally, a Barn Owl was observed emerging from the barn during an emergence bat survey in July 2020. This barn could not be surveyed internally in 2020, with a metal barrier preventing the main door from being opened.

7 Wintering Bird Surveys:

- 7.27 Recently completed across the Site in December 2019, January 2020 and February 2020.

- 7.28 Specific surveys for wintering bird species that have recently been undertaken in Winter 2019/ 20 identified a relatively limited assemblage of wintering birds present at the Site. None of the birds associated with nearby European designated Sites were recorded within the Site.

8 Reptile Surveys:

- 7.29 Completed of all suitable habitats within the Site (rough grassland and ruderal vegetation) between July and October 2018.
- 7.30 Whilst the vast majority of the Site does not provide any opportunities for reptiles; specific survey work confirmed the presence of low populations of three reptile species situated in discrete parcels of suitable habitat as illustrated on Plan ECO1. Reptile species recorded include Grass Snakes, Slow-worms and Common Lizard.

9 Great Crested Newt Surveys:

- 7.31 Aquatic surveys of waterbodies present within the main site were undertaken in Spring 2018, with environmental DNA (eDNA) surveys completed of additional waterbodies within the Fleurie Nursery site. Subsequently, the Fleurie Nursery waterbodies were subject to aquatic surveys in Spring 2019 to confirm the presence or absence of Great Crested Newts (GCN). No evidence of this species has been recorded within the Site.

10 Other Species:

- 7.32 Following survey work undertaken in 2018, no evidence of Hazel Dormice (surveys of which were completed of all suitable habitats within the Site – woodland, hedgerows, treelines and scrub – between July and November 2018), Otters was recorded within the site, and it can therefore be robustly concluded that both groups are absent from the Site and do not pose any significant ecological constraint on the emerging masterplan.
- 7.33 The results of the survey work will be incorporated into an Ecology Chapter of an EIA which as stated would be necessary for a site of this size, quality, and proposal.
- 7.34 A suite of targeted ecological surveys have been undertaken to assess the presence, population size and distribution of protected and notable species within the Site, as well as the value and distribution of the habitats present. The methodologies for these individual surveys have given due regard to relevant best practice guidance which has been published for the appropriate target groups.
- 7.35 The information collected through these surveys will be sufficient to undertake impact assessment work in line with guidance produced by the Chartered Institute of Ecology and Environmental Management (CIEEM). This approach, which involves professional judgement and the use of available guidance and information, will seek to assess likely impacts by considering a range of parameters including the extent, magnitude, duration, reversibility, timing, and frequency of works.

Anticipated Effects

- 7.36 There are no habitats of 'Principle Importance', as listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act within the Site. There a number of these habitats present in the local area, including '*Coastal and Floodplain Grazing Marsh*' and '*Lowland Deciduous Woodland*' however the proposals are not considered to cause any significant adverse impacts to these. There is potential for indirect impacts, such as dust disposition, however none of these are out of the realms within which suitable measures of best practice could not sufficiently mitigate.

- 7.37 Given the Site's arable qualities, the habitats on Site are not of any particular ecological value. The treelines, hedgerows and streams offer potential opportunities to a range of species, including birds, bats, Water Vole and Badger. Possible effects on these protected and notable species include for both land take, as a result of the proposals, as well as indirect impacts such as noise, dust and light during construction (among others) and through changes in management practices and the Sites purpose in the long-term.
- 7.38 There are no statutory or non-statutory designated sites of nature conservation interest within or adjoining the site. Given the separation of the application from any statutory designated sites, it is considered that the adoption of best practice measures during construction will be sufficient to ensure any significant adverse impacts are avoided, either alone or in combination with other plans and projects.
- 7.39 The habitats present on site offer potential opportunities to a range of other protected and notable species including foraging and commuting bats, common reptiles, breeding and overwintering birds, as detailed in section 7.3 above and on Plan ECO1 where necessary.
- 7.40 With regards to those receptors most likely affected, this includes the Badger Sett, Bat potential trees, Water Vole and Reptiles as detailed above. The locations of these receptors in relation to the road proposals are illustrated on Plan ECO1.

Potential Mitigation

- 7.41 Given the existing baseline, it is considered that there is significant scope to not only safeguard existing features of interest, but moreover to deliver significant improvements, both in terms of the quantity and quality of habitats, and in turn the opportunities that they provide for wildlife. The proposals also provide an opportunity to enhance connectivity passing both across and through the Site.
- 7.42 In light of the emerging Environment Bill, it is anticipated that there will be a requirement to demonstrate that the development proposals achieve a minimum of 10% net gain in biodiversity compared to the existing situation. In order to demonstrate this, specific assessment utilising the DEFRA Metric 2.0 calculator would be required, comparing the current ecological baseline with the proposed habitats post-development.
- 7.43 In order to assist with this, it is recommended that native and species-rich habitats should be incorporated into the emerging proposals, including wildflower grassland, native woodland planting and native hedgerow / scrub planting. Furthermore, as part of the drainage strategy, the provision of wetland features such as attenuation basins, swales and ponds could provide additional habitats of biodiversity interest within the Site.

Badgers

- 7.44 Whilst potential Badger setts were confirmed within the Site in the 2020 survey, it is considered unlikely that this group shall pose a significant constraint to the emerging development proposals. It is considered that the provision of new habitats such as new woodland planting and grassland would, in fact, be beneficial for this species compared to the existing situation.
- 7.45 In terms of the current emerging masterplan, it is considered that specific mitigation may be required in respect of Badgers, on account that intrusive works are proposed within 30 metres of these the two setts (new road construction). Further investigation to establish whether or not these constitute active Badger setts is likely to be needed, to ensure that this species has not returned in the intervening period.

- 7.46 Should further survey work confirm that the identified setts are utilised by Badgers, a licence would be required from Natural England. In this case, given the level of activity recorded and small size of these features, it is not envisaged that this would represent a major constraint to development and it is unlikely that mitigation would entail more than measures such as the adoption of specific methodologies in close proximity to the sett, and/or timing constraints associated with the closure and subsequent removal of the sett.

Bats

- 7.47 Given the nature of the Site, it is considered that there would be ample scope to provide mitigation within the Site if required. The lack of linear habitat features present within the Site, particularly to the north, means that there is clearly scope to deliver enhancements for foraging and commuting bats in the local area compared to the existing situation. The provision of habitats such as treelines, hedgerows, woodland and wildflower grassland, and particularly the creation of corridors of native planting passing north/ south and east/ west through the Site, would result in significant improvements compared to the existing situation.
- 7.48 Should losses of existing linear features identified to be utilised by foraging and commuting bats be required, mitigation could be delivered in the form of bolster planting of existing features. Ideally, this should seek to maintain or significantly improve the existing connectivity for this group.
- 7.49 Whilst the majority of bat activity which was recorded pertains to Pipistrelle species (which are relatively light tolerant), more light-sensitive species were recorded within the southern part of the Site during the course of the surveys, including Myotis bats and Barbastelle. As such, where possible the emerging proposals will need to minimise light spill onto retained habitats, including in particular the stream corridor, to safeguard opportunities and prevent potential criticism from consultees that the proposals could hinder the movement of bats through the local area.
- 7.50 Additional survey work in the form of evening emergence and dawn re-entry surveys have been undertaken on the central barn (to the south of the railway) and have not recorded the presence of roosting bats. Given the presence of bat potential trees, albeit of low potential, specific surveys are required to establish the presence or absence of roosting bats within trees in the event that these trees are to be lost.

Water Voles

- 7.51 It is evident from the proposed masterplan that areas identified to support the main concentration of Water Voles will be significantly separated from the Site, due to the proposed road crossing the Lidsey Rife stream. As such, there is potential for this species to be present in close proximity to the proposed road works.
- 7.52 Where construction works are proposed in close proximity to identified Water Vole burrows, mitigation shall be required. It is likely any works in this area shall require a licence from Natural England, which may cause specific timing constraints associated with the works. It is recommended that further Water Vole survey work is undertaken immediately prior to road construction taking place, to ascertain the current situation regarding this species at this location. In terms of the masterplan, it is recommended that the adoption of measures during construction such as 'clear span' structures or oversized box culverts are adopted. Or alternatively, the displacement of Water Voles using a suitable method.
- 7.53 Given the lack of evidence of this species to the north of the railway line, and that it is likely that this would constitute open space for reasons of flood risk, it is considered unlikely that this would pose any material constraint in terms of the development proposals. There appears to be

scope to deliver enhancements for this species, both in terms of the profile of the stream as well as bolstering the marginal planting which can be found (particularly to the north of the railway line). Furthermore, there may be scope to incorporate suitable habitats for Water Voles into the drainage strategy, such as providing steeper banks and additional bankside and marginal vegetation. As Water Voles are vulnerable to significant changes in the water level in the stream (which can flood burrows) and contaminated run-off, the emerging proposals will need to incorporate measures to ensure that the rates of runoff and pollution control mechanisms are included.

Reptiles

- 7.54 Where losses of suitable reptile habitat are required in order to facilitate the emerging development proposals (construction of the road), mitigation will be required in order to safeguard individuals from harm (noting that the legislation only protects reptiles themselves and not their habitat). This would most likely involve the translocation of reptiles from habitats to be lost to a suitable receptor location, which can either be within the Site boundary in a pre-identified 'receptor site', or alternatively off-site. It is important to note that a licence is not required to undertake translocation.
- 7.55 The size and nature of the receptor site would need to correspond to the extent to which reptile habitats are to be lost during the road construction. However, subject to the delivery of suitable habitat (essentially rough or long grassland, such as wildflower meadows subject to infrequent management), in addition to some scrub and hibernacula, it is considered that the delivery of an area of habitat which is at least as large as that which is to be lost would be easily accomplishable within the Site.

Breeding Birds

- 7.56 The requirement for mitigation will depend upon the findings of the remaining breeding bird surveys. As with other groups, there is scope to deliver significantly improved opportunities for birds compared to the existing situation, both in terms of the quality and quantity of habitats, given the poor current baseline. Where losses of suitable bird nesting and foraging habitat are required, it is considered that mitigation would most likely entail the provision of new replacement woodland, tree, scrub and grassland planting.
- 7.57 Given the presence of Barn Owl within the central barn, it is considered likely that this structure is currently utilised by this species for nesting. Access to this barn is required to fully confirm whether this species is using the barn for breeding.
- 7.58 Given that Barn Owl are a Schedule 1 species the birds, their nests, eggs and young are fully protected at all times throughout the UK. Given this barn is to be lost, in accordance with guidance and best practice, alternative roosting provision should be provided. This can either take the form of new boxes to be installed on a suitable mature tree, or alternatively a bespoke structure (either in the form of a nest box incorporated into a new building or a standalone structure). Ideally this should be provided as close as possible to the existing building in order to increase the likelihood of this being utilised by Barn Owls.
- 7.59 Barn Owls are also known to be particularly vulnerable to new roads, as birds tend to fly low to the ground and are therefore prone to being struck by vehicles. Given that this is likely to be an issue that would be picked up by the Council Ecologist or indeed other consultees given the nature of the proposals, it would be prudent to give early consideration to mitigation requirements, for instance the provision of trees and dense hedgerow/ scrub planting on either side of the carriageway to assist by forcing birds to fly higher over the road. This should be focused in particular in areas where suitable foraging habitat (longer grassland) is located close

to the road (for instance close to the stream corridor and the section to the west of the Oil Field). The provision of areas of long grassland as part of the emerging development proposals (for instance as receptor site for reptiles) would also provide enhanced foraging habitats for Barn Owls.

Wintering Birds

- 7.60 As outlined above in relation to breeding birds, the provision of more species-rich habitats as part of the emerging development proposals would deliver benefits for this group post-development. No specific mitigation would be required to cater for the wintering bird assemblage present at the Site.

Protected Sites

- 7.61 Given the significant separation between the Site and both The Brooks LNR and Fontwell Park Racecourse LWS, as well as the reasons for the designation of each site, it is considered very unlikely that any specific avoidance or mitigation measures will be required as part of the emerging development proposals. Additionally, in light of the findings of the wintering bird surveys undertaken in Winter 2019/2020, it can be robustly concluded that the Site does not support any of the qualifying species associated with either the Solent and Dorset Coast SPA or Pagham Harbour SPA / Ramsar site. As a result, it is evident that the development proposals would not involve losses to 'supporting habitat' utilised by qualifying species associated with these sites, and no specific mitigation would be required as a result.
- 7.62 Following previous correspondence with Natural England (NE) Officers in relation to the Solent and Dorset Coast SPA, it is understood that NE does not have any concerns with regard to potential recreational pressure arising on this Site from new residential development. NE has stated that whilst Terns will forage along the coastline during the summer months, there is evidence of birds foraging in busy harbourside areas. As a result, it is not anticipated that there would be any specific requirement for this Site to provide avoidance / mitigation for recreational effects, associated with new residential development.
- 7.63 A hydrological link appears to be present between the Site and the Solent and Dorset Coast SPA, in the form of the stream which flows towards the south, passing into the Lidsey Rife and then ultimately into the SPA. Whilst it is considered unlikely that concerns would be raised in terms of potential harm to the qualifying species associated with this Site, on a precautionary basis it would be logical to ensure that the emerging development proposals seek to incorporate measures which mitigate for potential hydrological effects both during construction and operation by, for instance, including measures to moderate the rate of flow into off-Site watercourses, in addition to pollution control measures such as using attenuation basins and swales as part of the drainage strategy.
- 7.64 The issue of nitrate neutrality has been raised by Natural England in relation to a number of European designated sites associated with the Solent; however, it is understood that no such concerns have been raised specifically with regard to the Solent and Dorset Coast SPA. Whilst further consideration will be necessary as the proposals develop, at this stage it is not anticipated that detailed nitrate calculations will be required in respect of this Site, nor would specific mitigation be necessary. On this basis, it is considered unlikely that specific mitigation will be required in respect of designated sites, beyond the delivery of features such as attractive public open space and a suitable drainage strategy.
- 7.65 At this early stage it is considered that the emerging proposals for the Site will be underpinned by a detailed ecological enhancement strategy. This strategy will seek to identify key areas of Green Infrastructure within the Site, the strategic location of which will accommodate existing

features of higher intrinsic value as well as those features identified to be important to protected and notable species. The retention of these habitats, alongside the adoption of further mitigation and enhancement measures as appropriate, such as new habitat creation, will serve to improve the ecological function and integrity of the Site as a whole.

Summary

- 7.66 The Site is dominated by very large arable fields which are considered to be of negligible ecological value. Other habitats present within the Site, including a network of hedgerows and treelines, small wooded areas, grassland and waterbodies, are of relatively greater ecological value, however, none of these are considered to represent 'irreplaceable' habitat. The habitat of comparatively greatest value within the Site is the stream which flows along the western boundary.
- 7.67 Two potential outlier Badger setts are located within the Site as illustrated on Plan ECO1. Further survey work is required prior to the road construction to ascertain whether these features are currently utilised by this species. Depending on the occupancy of these setts, forthcoming works may require a NE Badger licence to facilitate elements of the proposals. It is not envisaged that this would represent a major constraint to development and it is considered that at a worst-case, measures will include the adoption of specific methodologies and/or timing constraints associated with the closure and subsequent removal of the sett.
- 7.68 No roosting bats have been recorded within any of the buildings on site. There are several trees with bat potential as illustrated on Plan ECO1. Further survey work is required on these trees if in the event they are to be removed. Transect and static detector surveys identified that the Site is utilised by a range of bat species for foraging and commuting, with the greatest level of activity recorded along the stream corridor, in addition to the treelines and hedgerows. There is scope to deliver enhancements for foraging and commuting bats in the local area compared to the existing situation.
- 7.69 Water Voles were recorded as being present within the stream along the western boundary of the Site as illustrated on Plan ECO1. Where construction works are proposed in close proximity to identified Water Vole burrows, mitigation shall be required and will likely require a licence from Natural England. It is recommended that further Water Vole survey work is undertaken immediately prior to road construction taking place, to ascertain the current situation regarding this species at this location. Such works and licencing may incur additional timing constraints. It is recommended that the adoption of measures during construction such as 'clear span' structures or oversized box culverts are adopted, or alternatively, the displacement of Water Voles using a suitable methodology. Overall, there is scope to deliver enhancements for this species within the Site.
- 7.70 Breeding bird surveys are currently underway to quantify the significance of the breeding bird assemblage present at the Site. Of these, the most notable are Barn Owl and Cetti's Warbler which are both Schedule 1 species. Both these species are likely breeding on site, the locations of which are illustrated on Plan ECO1. With regards to Barn Owl, alternative roosting provision will likely need to be provided prior to the barn's demolition. Overall, there is scope to deliver significantly improved opportunities for birds compared to the existing situation, both in terms of the quality and quantity of habitats, given the poor current baseline.
- 7.71 No specific mitigation would be required to cater for the wintering bird assemblage present at the Site, however, the provision of more species-rich habitats as part of the emerging proposals would deliver benefits for this group post-development.

- 7.72 Low populations of Grass Snakes, Slow-worms and Common Lizard are present in discrete parcels of suitable habitat as illustrated on Plan ECO1. Given the location of these areas within the current road footprint proposals, mitigation will be required in the form of a translocation exercise in order to safeguard individuals from harm. Reptiles will need to be moved to a suitable receptor location the size of which would need to correspond to the extent to which reptile habitats are to be lost.
- 7.73 In conclusion, in light of the current proposals of the road corridor and future proposals it is considered that given protected species are likely to be affected by the project and that there are likely to be significant effects on the environment, an EIA is required. Whilst there are no protected sites within or nearby to the Site, the hydrological link between the Site and Solent and Dorset Coast SPA will require consideration, albeit it is unlikely that significant impacts will arise as a result.
- 7.74 The emerging proposals have potential to realise significant qualitative enhancements to on-site habitats, providing a mechanism whereby the nature conservation value can be significantly enhanced in the long-term. With reference to sensitive receptors, there is certainly scope to fully mitigate potential impacts and to prevent harm to those protected species and/or groups identified.
- 7.75 Subject to the relevant EIA work being undertaken as required, the development proposals will avoid all potential adverse effects and provide opportunities for the delivery of enhancements to biodiversity and will accord with all legislation and planning policy of relevance to ecology.

8.0 Air Quality

- 8.1 The proposed development can be expected to generate a relatively large volume of additional traffic on the local road network, and will also significantly affect the routing of traffic through the area as a result of the realigning of the A29, all of which will affect pollutant emissions along the affected road network. It is, therefore, judged that there is the potential for significant air quality effects, thus it is considered that the ES will need to include an air quality chapter.
- 8.2 The air quality chapter will consider the key air quality effects associated with the proposed development. It is anticipated that it will address the following:
- the impacts of the construction of the proposed development on dust soiling and concentrations of PM₁₀ during the construction period;
 - the impacts of emissions from road traffic changes as a result of the development on concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} at sensitive locations along the local road network;
 - the impacts of emissions from traffic on the roads adjacent to and through the proposed development on the air quality conditions that future residents will experience; and
 - whether any additional mitigation measures will be required to address any significant air quality effects.

Current Conditions

- 8.3 Air quality conditions in the vicinity of the proposed development are currently good, with no exceedances of the air quality objectives identified, and no air quality management areas declared anywhere in Arun District.

Methodological Approach

Policy Context and Assessment Criteria

- 8.4 A summary of all relevant national and local policy and guidance will be provided. Any local policies or guidance relating to air quality will also be considered, including the Air quality and emissions mitigation guidance for Sussex (2020). Relevant air quality standards and assessment criteria will also be set out.

Baseline Conditions

- 8.5 Baseline conditions in the study area will be determined by collating information from a number of sources. Industrial and waste management sources that may affect the area will be identified using Defra's Pollutant Release and Transfer Register, as well as through examination of the Council's Air Quality Review and Assessment reports. Local monitoring data will be taken from the Council's Air Quality Review and Assessment reports and background concentrations will be defined using the national pollution maps published by Defra. Where necessary, dispersion modelling will be undertaken to establish baseline pollutant concentrations. Consideration will be given to the presence of any Air Quality Management Areas in the study area.

Construction Dust Assessment

- 8.6 Given the size of the development, it is anticipated that a construction dust assessment will be required as part of the air quality chapter of the ES. The assessment methodology will follow that set out in the Institute of Air Quality Management's Guidance on the Assessment of Dust from Demolition and Construction. It will identify the potential for dust to be generated and the

sensitivity of the surrounding area and will combine these to determine the risk of dust impacts without appropriate mitigation. This information will then be used to determine the appropriate level of mitigation required to ensure that there are no significant effects.

Road Traffic Emissions Assessment

- 8.7 Roadside pollutant concentrations, and the impacts of the development-generated traffic changes, will be predicted using the ADMS-Roads dispersion model. The model will be verified against local monitoring data.
- 8.8 Impacts will be predicted at a number of locations both within, and close to, the proposed development. Receptors will be selected to represent worst-case exposure. For new residential areas within the development these will be at the boundaries of these areas nearest the road. For existing properties, these will be at the roadside façade of properties along the local road network where the development-generated traffic changes will be greatest, and at locations where concentrations are expected to be highest, such as near to junctions. Specific receptors cannot be selected at this stage as their selection will depend upon the layout of the scheme and the changes in traffic flows predicted in the traffic data upon which the assessment will be based, which are not yet available.
- 8.9 The model will be used to predict existing baseline pollutant concentrations and the likely concentrations in the future, both without and with the development.
- 8.10 Predicted concentrations at existing nearby sensitive receptors will be compared with the relevant air quality objectives and impact descriptors at individual receptors will be determined following the Environmental Protection UK and Institute of Air Quality Management guidance on Planning for Air Quality. The overall significance of the air quality effects will then be determined following this guidance.
- 8.11 An emissions mitigation assessment will also be included, as required by the air quality and emissions mitigation guidance for Sussex (2020).

Anticipated Effects

- 8.12 The Institute of Air Quality Management's Guidance on the Assessment of Dust from Demolition and Construction advises that, with appropriate mitigation in place, the effects of construction dust will be 'not significant'. The assessment will thus focus on determining the appropriate level of mitigation to be applied so as to ensure that effects will normally be 'not significant'.
- 8.13 Once operational, the key air quality effects of the proposed development can be expected to be related to road traffic emissions. For new receptors within the proposed development, predicted concentrations will be compared with the relevant air quality objectives, and any exceedances will necessarily be deemed a significant adverse effect, without mitigation. Appropriate mitigation will be identified to ensure that future residents experience acceptable air quality, and thus that there are no significant effects (most likely through design changes).
- 8.14 There is the potential for both beneficial and adverse impacts at existing properties along the local road network, and the assessment will identify the extent of such impacts and whether or not they might constitute an overall significant effect. Where necessary, appropriate mitigation measures will be recommended to ensure that there are no significant effects.

Potential Mitigation

- 8.15 Appropriate best practice mitigation measures will be recommended to ensure that construction phase effects will be 'not significant'.

- 8.16 It is anticipated that the scheme design will ensure that no new homes are introduced into areas of unacceptable air quality; if the assessment suggests that such a situation will occur then the design will be amended accordingly.
- 8.17 Where necessary, appropriate mitigation measures will be recommended to ensure that the overall effect of the proposed development on air quality at existing properties is 'not significant'.

Summary

- 8.18 The air quality chapter will consider the potential for effects during the construction works and relating to road traffic emissions once the proposed development is operational. The chapter will demonstrate air quality conditions for future residents, although the primary focus is likely to be the impacts of changes in traffic flows as a result of the proposed development on pollutant concentrations at existing properties along the local road network.
- 8.19 Appropriate mitigation measures will be recommended to ensure that the overall effect of the proposed development on air quality is 'not significant'.

9.0 Noise and Vibration

9.1 The Noise and Vibration chapter of the ES will be prepared by AF-Acoustics. This chapter will assess the likely significant effects of the construction and operational phases of the proposed development on the environment with respect to noise and vibration.

9.2 Potential effects that will be assessed include:

- noise and vibration effects from construction activities at off-site sensitive receptors,
- road noise effects from the realigned A29, the new secondary road connections to the local road network, and associated changes in road traffic flows on the existing road network, and,
- noise from existing noise sources such as roads, the West Coastway line (railway), and surrounding commercial land uses which may cause adverse effects at the noise sensitive aspects of the proposed development.

Current Conditions

9.3 The baseline environment within the Site be established by measuring ambient noise levels on and within the vicinity of the Site, and where appropriate, by noise modelling.

9.4 It is proposed to undertake measurements at the five locations set out in Table 9.1 below. These locations are shown in Figure 9.1 in the anticipated effects section of this chapter.

Table 9.1 Proposed noise and vibration measurement locations

Position	Description	Purpose	Coord. (BNG)		Measurement
			X	Y	
MP-1	Adjacent to Fordingbridge site and Barnham Road (on land for A29 realignment).	Measurements of commercial noise originating from the Fordingbridge site. Baseline noise levels for properties on Barnham Road for the construction and road noise assessments.	495219	105167	Noise
MP-2	Adjacent to St Philip Howard RC High School.	Measurements of noise from the High School, and noise from Barnham Station (announcements, railway points).	495299	104494	Noise
MP-3	Adjacent to West Coastway railway line, on access track to barn.	Measurements of noise and vibration arising from the railway line.	494727	104379	Noise and vibration
MP-4	On footpath across open ground to the east of Pine Close, adjacent to where the secondary road will join existing A29.	Baseline noise measurements for properties in Westergate for the construction and road noise assessments.	493939	104899	Noise

Position	Description	Purpose	Coord. (BNG)		Measurement
			X	Y	
MP-5	On path leading from Church Lane, near St George's Church and Eastergate Primary School.	Measurements of noise from the primary school. Also will provide background noise levels for nearby properties during the evening and night.	494662	105080	Noise

9.5 Further details on the proposed noise monitoring survey will be presented to ADC for comment, prior to undertaking the measurements.

9.6 In the case of determining noise levels from road links that may be subject to a change in traffic flow, the pre-existing basic noise levels will be established via noise modelling in accordance with the Department of Transport 'Calculation of Road Traffic Noise' (1988). This is the recommended method set out in the Design Manual for Roads and Bridges (LA111).

Methodological Approach

9.7 The noise and vibration assessments will be conducted in accordance with the principles set out in the following policies and guidance.

9.8 The National Planning Policy Framework (NPPF), first published in March 2012 and revised on 24 July 2018, sets out the Government's planning policies for England and how these are expected to be applied. In respect to noise, the National Planning Policy Framework states that planning policies and decisions should aim to:

- avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
- mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;
- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and
- identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

9.9 For what constitutes a significant adverse impact, the NPPF refers to the Noise Policy Statement for England.

9.10 The **Noise Policy Statement for England 2010 (NPSE)** expands on the term 'significant adverse impact' from the NPPF. The document also defines the meanings of the terms No Observed Effect Level (NOEL), Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL).

9.11 **National Planning Practice Guidance (PPG)**, first published in March 2014 and updated in July 2019, provides advice on how planning can manage potential noise impacts in new development, the principles to be followed in considering the noise effects of developments, and sets out a noise exposure hierarchy table, based on the likely average response of those affected.

9.12 The **Arun Local Plan 2011-2031 with Main Modifications**, which was adopted by resolution of Full Council on 18th of July 2018. The following policies set out in the Arun Local

Plan 2011-2031 are potentially relevant in respect of noise and vibration and will be considered in preparing the noise and vibration chapter of the ES:

- Policy QE DM1 - Noise pollution
- Policy LAN DM1 – Protection of landscape character
- Policy D DM1 - Aspects of form and design quality
- Policy ECC DM1 - Renewable energy
- Policy QE SP1 - Quality of the environment

9.13 The '**Guidelines for Environmental Noise Impact Assessment**' published by the Institute of Environmental Management and Assessment in 2014, which sets out good practice in respect of scoping and undertaking noise assessments. The guidelines are applicable to noise impact assessment for any scale of development proposal, including core principles to achieve effectively integration with the EIA, and provide advice on the issues that need to be considered in a noise impact assessment and whether the appropriate conclusions are being reached. The factors include:

- The appropriateness of the noise parameters used for the situation;
- The reference time period used in making the assessment;
- The level, character and frequency content of the noise sources under investigation; and,
- How the predicted noise levels relate to relevant Standards and guidelines.
- The guidelines also recommend that the assessor should determine the degree of impact based on evidence derived from the assessment.

9.14 The '**Guidelines for Environmental Noise Impact Assessment**' provide advice on the selection of sensitive receptors which may include land uses other than dwellings, and animals other than human beings, and advice on how sensitivity may be assigned to individual receptors, that is relevant to all forms of an environmental noise assessment.

9.15 Construction and road traffic noise modelling will be undertaken using the noise prediction software CadnaA 2020. This state of the art software meets the requirements for Quality Assurance of software for the calculation of sound outdoors according to DIN 45687 and ISO 17534 Series, and fully implements UK calculation methodologies such as '*Calculation of Road Traffic Noise*' (CRTN) and BS5228-1:2009+A1:2014 which is used for construction noise predictions.

9.16 Further detail on how different aspects of noise and vibration will be assessed is given below.

Construction noise and vibration assessments

9.17 This assessment would determine the likely noise and vibration effects of the construction phase on existing receptors and will recommend mitigation measures, if necessary.

9.18 British Standard 5228-1:2009 + A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise' provides noise source levels for typical construction equipment, prediction methods to determine construction noise levels at distances from the works, and provides example methods of determining the significance of impacts. The construction noise assessment will predict the noise levels associated with fixed/ mobile construction plant, material haulage within the Site, the movements of deliveries within the development Site and car movements associated with staff parking in accordance with British Standard 5228-1:2009 + A1:2014.

9.19 The potential significance of the predicted noise levels will then be assessed based on the change from the baseline noise levels using the 'ABC' method set out in British Standard 5228-1:2009 + A1:2014 Section E3.2 and Table E.1 BS 5228-1; the baseline noise level will be adopted as the LOAEL, whilst the SOAEL will be determined as per Table E.1.

9.20 The magnitude of construction noise impact at receptors will be determined in accordance with the following table:

Table 9.2 Determination of magnitude of construction noise impact

Magnitude of impact	Construction noise level
Major	Above or equal to SOAEL +5dB
Moderate	Above or equal to SOAEL and below SOAEL +5dB
Minor	Above or equal to LOAEL and below SOAEL
Negligible	Below LOAEL

9.21 The noise effects of construction deliveries and diversions on the local road network will be determined by a comparison of the Basic Noise Levels (BNL) for road links calculated in accordance with Department of Transport 'Calculation of Road Traffic Noise' (1988) and assessed using the significance criteria set out in LA 111 'Noise and vibration' (Revision 2, May 2020) published by Highways England in accordance with the following table:

Table 9.3 Determination of noise effects of construction deliveries and diversions on the local road network

Magnitude of impact	Change in BNL, dB LA10,18hr
Major	Greater than or equal to 5.0
Moderate	Greater than or equal to 3.0 and less than 5.0
Minor	Greater than or equal to 1.0 and less than 3.0
Negligible	Less than 1.0

9.22 The likely significance of construction vibration on human occupants of buildings will be determined at selected representative sensitive receptors that are located within 50m of the Site. Vibration predictions will be undertaken in accordance with British Standard 5228-2:2009 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration'.

Road traffic noise assessment

9.23 The proposal includes realigning the A29 between Lidsey and Fontwell Farm, which will form a north-south spine through the proposed development. A new roundabout with the B2233 Barnham Road will be constructed (approximately 125m to the west of Downview Road). There will be two new secondary road connections to the local road network (one joining the existing A29 Westergate Street just to the south of Pine Close, and the other connecting to Gospond Road beside Barnham Station). These changes to the road network and development generated traffic have the potential to cause noise effect at existing noise sensitive receptors located near the road network. The ES will therefore include an extensive road traffic noise assessment.

9.24 The 'Design Manual for Roads and Bridges' (DMRB) LA 111 'Noise and vibration' (formerly HD 213/ 11 – Revision 2 and IAN 185/ 15) sets out the requirements for assessing and reporting the effects of highways noise and vibration from construction, operation and maintenance projects. It can also be used to determine the likely potential effects of a new development given the expected change in road traffic flows.

9.25 The study area for the road traffic noise assessment will encompass all receptors at which effects can be reasonably foreseen. This will normally include a zone extending 600m from the extents

of any new or altered road link and will also include corridors along road links where a change in noise level is anticipated. The extent of the study area may also be influenced by cumulative effects due to other development projects; we, therefore, propose to consult with West Sussex County Council to ascertain whether the normal study area should be expanded due to cumulative projects.

- 9.26 The baseline noise environment will be determined through noise predictions and the results of the baseline noise survey.
- 9.27 Road traffic noise calculations shall be undertaken at noise sensitive receptors (or groups of noise sensitive receptors) to identify the following changes in operational noise:
 - Short term: Do-Minimum Opening Year compared against the Do-Something Opening Year
 - Long-term: Do-Minimum Opening Year compared against the Do-Something Future Year
 - Non-project: Do-Something Future Year compared against the Do-Minimum Opening Year
- 9.28 Predictions will be undertaken using the method set out in CRTN as modified by Appendix A of LA 111 for receptors within 600m of the new road link. TRL 'Method 1' (based on hourly traffic data) or 'Method 3' (based on 18-hour AAWT traffic data) will be used to convert road traffic noise levels from the $LA_{10,T}$ noise metric commonly used in the UK, to the L_{night} noise metric.
- 9.29 The level of change at noise sensitive receptors which are within the study area but not within 600m of the new road link or roads physically changed by the project will be estimated from the change in Basic Noise Level of the adjacent road links.
- 9.30 The procedure for determining the significance of effects at receptors set out in LA 111 will be followed. This involves determining receptor sensitivity, the magnitude of the noise changes for each scenario, and a process where professional judgement is applied across a range of factors to determine whether an initial estimate of significance should be modified.
- 9.31 The sources of data, methodology and results of the operational noise assessment will be set out in the noise and vibration section of the ES.

Operational noise assessment

- 9.32 Assessment of potential noise effects from noise sources within the Site (e.g. the primary school and community plots) will take into account the baseline noise survey and be undertaken in accordance with British Standard BS 4142:2014+A1:2019 '*Methods for rating and assessing industrial and commercial sound*', and with reference to British Standard BS 8233:2014 '*Guidance on sound insulation and noise reduction for buildings*' and World Health Organisation guidance on community noise.
- 9.33 Given the location of the Site and the noise sources separating it from the closest existing noise sensitive receptors, it is not anticipated that significant adverse noise effects would arise as a result of on-Site noise generating sources. However, this will be confirmed by assessment and if necessary, any adverse effects can be mitigated through good design and consented conditions, so that significant adverse effects can be avoided.

Residential noise assessment

- 9.34 It is recognised that noise exposure can impact upon quality of life and give rise to adverse health effects including annoyance, changes to behaviour, difficulty understanding speech communication, sleep disturbance, hypertension and cardiovascular effects. For this reason, noise levels are a material planning consideration when deciding planning applications for new noise sensitive development (such as residential, senior living and school buildings).

- 9.35 Major transportation noise sources which may affect future dwellings are the West Coastway railway line, the diverted A29 and Barnham Road. Other sources of noise include the Fordingbridge industrial site, the St Philip Howard Roman Catholic High School, the Eastergate Church of England Primary School, and Barnham Station.
- 9.36 The residential noise assessment will refer to the Noise Exposure Categories set out in the Arun Local Plan 2011-2031 Policy QE DM1 '*Noise pollution*' and the corresponding planning guidance. The noise assessment will also consider appropriate LOAEL and SOAEL values for residential dwellings in accordance with the National Planning Policy Framework and Defra's Noise Policy Statement for England. In addition to these local and national planning documents, the residential amenity assessment will consider:
- **Professional Practice Guidance on Planning & Noise** (ProPG), 2017, which provides noise practitioners with guidance on a recommended approach to the management of noise within the planning system. The guidance document encourages better acoustic design for new residential development and aims to protect people from the harmful effects of noise. ProPG recommends a 2-stage approach, an initial noise risk assessment of the proposed development Site and where the results indicate that noise requires further consideration a full assessment in the form of an Acoustic Design Statement (ADS). The main emphasis of the ProPG is the encouragement of good acoustic design, such as site layout, building massing, orientation and internal layout, at an early stage of the development process.
 - **British Standard 8233:2014** '*Guidance on sound insulation and noise reduction for buildings*' provides recommendations for the control of noise in and around new or refurbished buildings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new or refurbished buildings undergoing a change of use rather than to assess the effect of changes in the external noise climate.
 - **British Standard 4142:2014+A1:2019** '*Methods for rating and assessing industrial and commercial sound*' provides a methodology for determining whether commercial noise of an industrial nature is likely to cause an adverse impact at dwellings.

Anticipated Effects

- 9.37 Noise can have a significant effect on both the health and environment of individuals and communities. The effects of exposure to noise from transportation sources include annoyance and sleep disturbance, and associations have been found between long term exposure to transport noise, particularly from aircraft and road traffic, and an increase in the risk of cardiovascular effects (heart disease and hypertension). There is also evidence that exposure to noise can have a negative effect on children's performance on tests of episodic memory can impair reading and oral comprehension, and result in poorer performance on standardized assessment tests.
- 9.38 Existing noise sensitive receptors in the vicinity of the proposals include:
- the residential areas of West Barnham, Eastergate, Woodgate and Lidsey.
 - St. Philip Howard Roman Catholic Secondary School, Eastergate Church of England Primary School, Westergate Community School.
 - Listed buildings including: The Parish Church of St George, Manor Farmhouse, Eastergate House, The Wilkes Head Inn, The Old House, Thimbles, Barnham Court, The Lodge of Barnham Court, The Parish Church of St. Mary, and Lidsey House.
 - The Church Lane Eastergate Conservation Area, the Church Lane Barnham Conservation Area and the Barnham Area of Special Character, and local open spaces.

- Willows Caravan Park and Lidsey Caravan Park.

- 9.39 A further assessment to identify the location of additional sensitive receptors such as schools and hospitals, likely to be positioned at further distances from the Site, will be undertaken within the ES noise assessment. The sensitivity of each receptor will be determined in accordance with best practice guidance.
- 9.40 During the construction phase, it is likely that adverse noise effects will occur at the receptors closest to the Site; typically the effects of construction noise are limited to around 300m from construction activities, and in many cases where other buildings provide acoustic screening the distances may be much less. Construction vibration is unlikely to cause significant adverse effects at receptors more than 100m from the source of vibration.
- 9.41 Road traffic noise effects can be positive or negative. It is likely that the realignment of the A29 will reduce road traffic noise levels through Lidsey and Westergate but may lead to increased noise levels at some properties in Eastergate. The new secondary roads may increase noise levels at some properties in Woodgate and at the residential properties around Barnham Station.
- 9.42 It is intended that there will be significant buffer space between the new A29 alignment and the proposed new residential plots. Nonetheless, some of the new properties may be subject to road noise from the A29 and may require mitigation to be implemented, either in the road design or the design of the properties to reduce noise ingress.
- 9.43 The West Coastline railway may cause adverse noise and vibration effects at the proposed dwellings at the southernmost development plots. The noise effects are likely to extend further into the development Site than vibration effects, since ground vibration typically attenuates rapidly with distance from the source.
- 9.44 Figure 9.1 below shows the likely extend of elevated noise levels from the existing roads and railway, based on the third round of strategic noise mapping conducted by Defra.

Figure 9.1 Existing dB LAeq,16hr road and railway noise levels from Defra strategic noise mapping



Potential Mitigation

- 9.45 Best practicable controls on construction noise and vibration will be required, to prevent the construction of the proposed roads and development from causing significant adverse effects at existing noise or vibration sensitive receptors.
- 9.46 Any essential mitigation (measures required to reduce and if possible offset likely significant adverse environmental effects, in support of the reported significance of effects in the environmental assessment) in respect of the A29 and other proposed roads will be determined. Essential mitigation measures will be included in the road traffic noise assessment provided they are deemed suitable and have legal basis for inclusion in the project.
- 9.47 An assessment will be conducted to determine whether any existing properties will qualify for noise insulation under the Noise Insulation Regulations 1975 (as amended). These regulations only apply to existing properties adjacent to 'new' or 'altered' roads, and do not apply to properties which are not yet constructed, although the principles of sound insulation may be adopted in the design of any new dwellings to ensure that indoor noise levels, and noise levels at balconies and garden areas are appropriate.
- 9.48 Noise and vibration from the West Coastline railway may be perceptible at the southernmost residential plots, and therefore it may be necessary to provide a separation buffer between the railway and the proposed residential development. Noise mitigation may also be required in the design of these properties.

Summary

- 9.49 The key noise and vibration issues for this proposed development are expected to arise from the realignment of the A29, the construction of new secondary roads, the resulting changes to traffic flows on the wider road network, and the proximity of the West Coastline railway.

10.0 Historic Built Environment

- 10.1 The Historic Built Environment chapter of the ES will be prepared by Development Archaeology Services (ARCDAS).
- 10.2 The Historic Built Environment data will be collated and reviewed as a component of a Desk Based Assessment (DBA). The DBA will be appended to the ES. DBA searches have been undertaken for archaeological records (including built heritage) within the Site area.
- 10.3 The methodology follows Industry (CIfA2014) guidelines. West Sussex planning authority guidelines require built environment and archaeological data sets to be reviewed and considered in one document (the DBA for the project). Reference will be made to and consideration given to key points guidance notes contained within:
- Arun Local Plan (Section 16: Building Conservation and Archaeological Heritage) (2011-2013) adopted July 2018.
 - NPPF (June 2019 Section 16)
- 10.4 Initial work to prepare the DBA has included searches of the following sources:-
- West Sussex Historic Environment Record (HER) consulted.
 - West Sussex Records Office (searches completed)
 - In house datasets of designations (Historic England English Heritage 2014).
 - Scheduled Monuments
 - Listed Buildings
 - Registered parks and gardens
 - Registered Battlefields
 - Historic Landscapes
- 10.5 In addition, a site walkover and photographic record / survey has been undertaken.
- 10.6 The site inspection in relation to built heritage assets was undertaken to:
- Assess and validate data collected as part of the DBA
 - Assess the topography of the Site and layout of built heritage assets within the site area (gross site area) including sub areas (conservation Areas) proximal to the proposed development / Site area.
 - To assess inter-visibility with heritage designations.
- 10.7 The majority of all reviewed built heritage assets lie within the three Conservation Areas that lie proximal to the Site area:
- The Square Eastergate
 - Church Lane Eastergate
 - Church Lane Barnham
- 10.8 In addition, remnants of the Portsmouth and Arundel Canal (Scheduled Ancient Monument) is present along the southern boundary of the Site.
- 10.9 A review of heritage assets near to the Site area suggest there will be no direct physical impact to any recorded built heritage asset (although refer to Portsmouth Arundel Canal note below). It is considered that impact will be limited to 'visual / setting impact' (indirect effects).

10.10

In order to assess which built heritage asset designations will be subject to 'viewshed' analysis, full analysis (relating to each recorded listed and local heritage asset within and surrounding the Site area) and assessment of the associated impact will be carried out. Initial concludes are identified in Table 10.1 below:-

Table 10.1 Potential operational impacts (after viewshed analysis and photographic / walkover review)

Receptor	Interest and significance of interest	Magnitude of impact	Significance of impact
All assets within The Square Eastergate Conservation Area.	Architectural /historic. Variable: moderate to high	The value of buildings (all listed Grade II) lie within their fabric and collective association. There would be no physical impact to any built asset. The proposed new build areas would not be visible from buildings within this area due to the presence of intervening buildings Magnitude of impact - no change	Neutral
St George's Church, Church Lane Eastergate Conservation Area.	Architectural/ Historic List entry number: 1233516 Parish church of St. George, Church Lane, Eastergate Grade II* Chancel, nave with shingled bell-turret at west end and north vestry. Largely Norman though much restores with later windows. Vestry C19th addition.	The value of buildings (all listed Grade II) lie within their fabric and collective association. There would be no physical impact to any built asset. The proposed new build areas would not be visible from buildings within this area due to the presence of intervening buildings. Magnitude of impact - no change	Moderate
All assets within Church Lane Barnham	Variable: moderate to high	The value of buildings (all listed Grade I Grade II) lie within their fabric and collective association. There would be no physical impact to any built asset. The proposed new build areas would not be visible from buildings within this area due to the presence of intervening buildings and topographic highs between the northern boundary of the conservation area and Magnitude of impact - no change	Neutral
Portsmouth – Arundel canal		Present within the south of the gross Site area is the line of the now derelict Chichester Arundel Canal (14 MWS5754). This east west orientated liner feature is, within the study Site area, predominantly filled in and only partially visible: Magnitude of impact: to be confirmed	Neutral to possibly Moderate Variable subject to use within cycle route or other to be decided.

11.0 Archaeology

- 11.1 The Archaeology chapter of the ES will be prepared by Development Archaeology Services (ARCDAS). The chapter will provide an assessment of the significance of archaeology within the Site area and potential for impact of works associated with the proposed development to impact on the potential archaeological resource that may be present within the Site area. Appropriate, proportional mitigation will be proposed.
- 11.2 A base line assessment of the types and potential significance of potential archaeological resources present within the area will be presented.
- 11.3 A Desk Based Assessment (DBA) is being undertaken with research based on final approved master plan (or as near as confirmed / available at Pre-app stage). The DBA will be appended to the ES. The methodological approach will follow current West Sussex / East Sussex 'industry approved' guide lines (2019 version) and appropriate industry (CIFA 2014) guidelines
- 11.4 Reference will be made to and consideration given to key points guidance notes contained within:
- Arun Local Plan (Section 16: Building Conservation and Archaeological Heritage) (2011-2013) adopted July 2018.
 - NPPF (June 2019 Section 16).
- 11.5 The DBA will be informed with reference to the following data sources:-
- West Sussex Historic Environment Record (HER) consulted.
 - West Sussex Records Office (searches completed)
 - In house datasets of designations (Historic England (English Heritage 2014).
 - Scheduled Monuments
 - Listed Buildings
 - Registered parks and gardens
 - Registered Battlefields
 - Historic Landscapes
- 11.6 In addition, a site walkover and photographic record / survey has been undertaken.
- 11.7 The site inspection in relation to build heritage assets was undertaken to:
- Establish the presence of above ground archaeology, whether or not previously recorded.
 - Assess and validate data collected as part of the DBA
 - Assess the topography of the Site
 - To assess inter-visibility with heritage designations.
- 11.8 Table 12.1 shows a broad hierarchy that will be applied to final data set. The hierarchy is arranged from those generally seen to be the most important reducing to where although a heritage asset is considered present it might be considered as to be of very little or no significant interest. It should be noted that any categorisation or definition of importance will require the context and condition of the asset to be considered. Whilst many heritage / archaeological assets are listed within each counties Heritage Environment Record and or by Historic England through the National Heritage each individual site generally required site specific assessment to allow for accurate consideration of the assets within the Site and under possible threat of

impact. The majority of proposed development will have the potential to impact upon the archaeological resource contained within the Site.

Table 11.1 Criteria used to assess levels of importance of archaeological / heritage assets

Importance level	
High	World Heritage Sites; sites of international importance. Scheduled Ancient Monuments; sites of national importance. Listed Buildings; Grades I and II*.
Medium	Listed Buildings; Grade II. Conservation Areas. Registered Parks and Gardens; Battlefields. Areas of Archaeological Interest; sites of regional importance. HER and NMR entries (most).
Low	Sites of little significant value or interest. Sites now badly damaged or almost destroyed. Find spots of little context.
Negligible	Sites of no significant value or interest. Sites now destroyed. Find spots of uncertain provenance.

Source: Applicable to both built heritage and archaeological resources

Table 11.2 Criteria applied to the heritage assets of the Site

Importance level (per table 12.1)	Type (archaeological only)	Within the Site	Comment (preliminary)
High	World Heritage Sites Scheduled Ancient Monuments	None	None present within the Site, though noting the line of Portsmouth Arundel Canal (potential impact subject to any finalised decision re. incorporating as cycle route or other).
Medium	Area of Archaeological Interest HER NMR Entries	Present	From DBA and subsequent purposive survey main 'Site' archaeological features have the potential to be present across the full Site. The resource though not destroyed is likely to have been truncated by agricultural / plough activity.
Low	HER NMR Entries (find spots and poorly provenance finds)	Present	Moderate frequency of 'find spots' and entries predominantly related to field system boundaries.
Negligible	Destroyed sites	None recorded	

11.9

In archaeological terms the impact may affect both above and below ground elements of a resource. The setting of the asset will also be considered. Based on a review of all data sets the importance of various categories of archaeological resource present or predicted to be present within the Site area is presented at Table 12.2. Based on the review of all data sets it is considered that known archaeological resources within the Site area might be assessed as being of potentiality of Medium to Low significance.

Assessment of Impacts:

- 11.10 The scale of impact of the majority of development 'types' can be set against certain criteria, as summarised below in Table 12.3. It is considered probable that the proposed development will have a moderate to high potential to impact on heritage assets assessed as being of Medium to Low significance. As noted above assets relating might be afforded a higher (pre-historic burial areas/ monuments) classification was it not for impact / damage to them as evidenced in the evaluation survey focusing on this Site area.

Table 11.3 Criteria used to assess impact on the archaeological resources within the Site area

Impact Level	Destruction or damage or modification
High	Destruction of high and medium category assets; destruction of the ability to understand the context of features.
Medium	Destruction of low category assets; change in the ability to understand the context of features contained in the composite historic landscape; significant change of environment factors.
Low	Slight reduction in the ability to understand the context of features contained within a composite historic landscape.
Negligible	Negligible or no change to the Site or related features; little or no visual impact by the proposed development.

Table 11.4 Assessment of impact on the archaeological resource and effect of mitigation

Impact Level	Potential damage or change
High	Some impact to medium category assets. Mitigation to be put in place to enhance the ability to understand the context of features.
Medium	Some impact on low category assets. Mitigation measures to be put in place to enhance the ability to understand the context of features contained in the composite historic landscape; slight to minimal visual impact by the proposed development.
Low	Mitigation measures to be put in place to enhance the ability to understand the context of features contained in the composite historic landscape.
Negligible	Slight reduction in the ability to understand the context of features contained within a composite historic landscape; slight to minimal visual impact by the proposed development

Consultation with ADC's archaeological advisor

- 11.11 Initial discussions have taken place with ADC's archaeological advisor and will inform the assessment of the Site. The following is relevant:-
- 1 Any site of this size on the West Sussex coastal plain is bound to contain deposits and structures of archaeological interest whose significance would be threatened by development. It is therefore imperative that a suitable Desk-Based Assessment of the heritage that it contains or is likely to contain should be undertaken at an early stage in the process in order that appropriate measures to mitigate impact might be properly planned.
 - 2 Where a significant archaeological presence is predicted it might be appropriate to evaluate this further by field investigation, whether intrusive or non-intrusive or both, in order to identify anything of such importance that it should be preserved, e.g. through redesign of the proposed development in specific areas.
 - 3 However, it is unlikely that the majority of the archaeological interest contained within the Site and likely to be impacted on by development would be so important as to require

preservation in-situ, and for this it would be appropriate to require a process of evaluation by trial trenching and preservation of significance through further investigation and recording – likely to be secured through use of standard planning conditions as appropriate.

- 4 On a Site of such size and public interest it is important that resources are in place to ensure suitable community involvement in the process and results of discovery. It seems that the Site does not contain any designated heritage assets. The setting of the medieval village of Eastergate, as represented by the church and other nearby historic buildings, needs to be given proper consideration, as should that of the line of the historic Portsmouth and Arundel canal.

Anticipated Effects

- | | |
|-------|--|
| 11.12 | No recorded significant archaeological (below ground heritage assets) are anticipated within the Site boundary but this will need to be subject to further assessment. Site areas where ground disturbance will be greater than 0.30m depth could require archaeological investigations prior to construction. |
|-------|--|

Potential Mitigation

- | | |
|-------|--|
| 11.13 | Archaeological evaluation, either in response to Condition/s or predetermination, is likely to be undertaken using remote sensing [geophysical survey] by machine trenching, or a combination of these techniques. |
|-------|--|

12.0 Water Environment and Drainage

- 12.1 Pell Frischmann will prepare the Water Environment chapter of the ES. The purpose of this chapter will be to undertake an assessment of the potential impacts on the water environment, to include surface water and groundwater resources (quantity and quality), impacts on flood risk to the Site and wider area and the existing sewerage infrastructure.
- 12.2 A Flood Risk Assessment and Sustainable Drainage Report will be prepared in line with the relevant planning policy and guidance. These reports will form part of the Technical Appendices to the ES, with relevant background and impact assessments included within the ES Chapter.
- 12.3 The National Planning Policy Framework (NPPF) and associated Planning Practice Guidance is the overarching planning guidance related to flood risk and climate change in the context of the water environment. There are also non-statutory documents and local planning policy and guidance that will have a bearing on the assessment methodology, mitigation and overall design principles. This includes, but is not limited to, the Non-Statutory Technical Standards for Sustainable Drainage, climate change allowance guidance published by the Environment Agency and Arun District Council and West Sussex County Council surface water drainage guidance.
- 12.4 Due to the scale of development, it has the potential to affect flood risk and the water environment through direct impacts such as increased runoff rate and volume, changes to infiltration and groundwater resources as well as development around several water courses. Therefore, Flood Risk and Drainage will be scoped into the assessment.

Current Conditions

- 12.5 Publicly available environmental databases will be accessed to obtain information on water resources, such as River Basin Management Plans defining key surface and ground water characteristics on quantity and quality.
- 12.6 It will be determined from the Environment Agency, through a request for the latest flood risk data whether and within the Site is considered at risk of fluvial, tidal or pluvial flooding. The Flood Map for Planning published by the Environment Agency and available online suggests some areas of the Site along the route of the Lidsey Rife to be at risk of fluvial and/ or tidal flooding. The Assessment will quantify the potential risk through a review of the anticipated depth and frequency of flooding.
- 12.7 Baseline environmental data searches will be carried out to show whether the Site lies within a groundwater Source Protection Zone (SPZ) or within a Nitrate Vulnerable Zone (NVZ) to establish key baseline criteria and receptors that may otherwise be far removed from the Site.
- 12.8 In accordance with local policy, groundwater monitoring has been installed at various locations across the Site since October 2019 agreed with engineers at both Arun District and West Sussex County Councils. This will establish a peak Winter groundwater level, but also demonstrate seasonal fluctuations as well as response to local rainfall.
- 12.9 British Geological Survey Solid and Drift Geology Maps will be used in conjunction with the groundwater monitoring results to illustrate variations in soils and bedrocks underlying the Site.
- 12.10 Based on the work carried out to date, and consultations with the relevant stakeholders, Table 13.1 outlines potential receptors relevant to the Site and a summary of the potential impacts.

Table 12.1 Potential receptors and associated potential impacts relevant to the Site

Receptor	Impacts
----------	---------

Local Residents	The Proposed Development may influence flooding to existing properties.
Groundwater resources	Potential risk of pollution through infiltration. Changes to infiltration and recharge of groundwater supplies through increased impermeable surfacing.
Surface Water Bodies	Impact from sources of contamination i.e. chemicals, waste, fuels and changes to surface water drainage patterns. Key receptors include Lidsey Rife, School Stream and other minor watercourses present.
Flood Zones	Changes to flood extent and floodplain dynamics if construction occurs in floodplain. A29 crossing of Rife will be a key impact.
Public Drainage Infrastructure	Additional loading on existing network may result in flooding issues or environmental impacts at treatment works outfall.

Methodological Approach

- 12.11 The assessment will consider the potential effect on water resources (both surface and groundwater) and local hydrology, including tidal effects. It will also consider the impact from the potential development on existing sewerage and drainage infrastructure on the water environment.
- 12.12 The FRA will be undertaken in accordance with the guidance of the National Planning Policy Framework and associated Planning Practice Guidance. The Sustainable Drainage Report will follow best practice published in the Non-Statutory technical Standards for Sustainable Drainage Systems, the CIRIA SuDS Manual and other local policy. This will demonstrate how surface water runoff from the proposed development will be managed in a sustainable way. It will identify a suitable method of disposal, allowable discharge rate and estimate the volume of attenuation volume needed to accommodate the additional runoff. The strategy for managing surface water will seek to include SuDS wherever possible that will also provide a level of treatment to discharge prior to entering the wider public system.
- 12.13 In the ES, the significance of each potential impact identified will be measured through a qualitative assessment, combining the sensitivity of each receptor and the magnitude of the perceiving impact in a matrix to estimate the significance. The sensitivity of a receptor relates to how vulnerable it may be to potential changes and/ or its importance and rarity. Sensitivity definitions to be used are described in Table 13.2.

Table 12.2 Sensitivity definitions

Sensitivity	Description
Very High	Very high importance and rarity, receptor is defined on an international scale or importance with very little opportunity for substitution.
High	Receptor defined on a national scale or having national importance, with limited potential for substitution.
Medium	Medium importance and/ or rarity, defined as having a regional importance with some potential for substitution or replication.
Low	Low rarity and importance defined on a local scale, or a receptor that could be substituted or replicated without concern.
Negligible	Receptor of very low importance or rarity that may not require substitution.

- 12.14 Each impact identified as part of the technical assessment can be qualified in terms of its magnitude of impact as per the definitions in Table 13.3. It should be noted that a magnitude of impact can be either beneficial or adverse.

Table 12.3 Magnitude of impact definitions

Magnitude	Description
Major	Substantial change in defining characteristics of resource, including quality and/or extent. Impacts are measurable and likely to change the integrity, viability or operation of resource.
Moderate	Measurable change in at least one key feature or defining element of resource, such as change to quality or scale. Impacts may have potential to affect the overall integrity of the resource
Minor	Measurable change to an attribute that may not affect the overall classification or definition of the feature. Impacts are unlikely to affect the overall integrity or nature of the resource.
Negligible	Small change to a key characteristic may be predicted but unlikely to be observed or result in measurable change to the quality or extent of the resource.
No Change	No discernible change to the characteristics features or defining elements.

- 12.15 When combined in a matrix, the sensitivity of a receptor and magnitude of impact define the significance of a potential effect as shown in Table 13.4. The significance can then determine whether the effect is of material concern or requires additional mitigation.

Table 12.4 Significance matrix

Receptor Sensitivity	Impact Magnitude					
		Major	Moderate	Minor	Negligible	No Change
	Very High	Very Large	Large	Moderate	Sight	None
	High	Large	Moderate	Moderate	Sight	None
	Medium	Moderate	Moderate	Sight	Sight	None
	Low	Sight	Sight	Sight	Negligible	None
	Negligible	Negligible	Negligible	Negligible	Negligible	None

- 12.16 The definition of each level of significance is described in Table 13.5.

Table 12.5 Significance level definition

Significance	Description
Very Large	These effects are usually associated with significant changes to resources of an international scale or importance that are likely to be fundamentally altered as a result.
Large	Effects with this significance are likely to be material considerations in the decision-making process, attributed to large-scale impacts on a nationally significant resource.
Moderate	These effects may be important and require mitigation but are unlikely to be key decision-making factors. The cumulative impact of several effects of this significance on a receptor may influence decision-making if they lead to an increase in the overall impact.
Sight	These effects may be raised as important on a local scale but are unlikely to be critical in the decision-making process but may be important in enhancing the subsequent design and mitigation of the project.
Negligible	No discernible effects, or those the scale of which can't be accurately measured. Impacts likely to be within the normal limits of variation or within the margin of error in assessments.

Anticipated Effects

- 12.17 The likely environmental impacts on flood risk and drainage as part of the proposed development would centre around the key themes of changes to runoff and infiltration due to new impermeable surfaces, the potential for pollutant and contamination release both long term and accidental and direct changes to watercourses and their associated floodplain.
- 12.18 Impacts may occur during the construction phase, operational phase or may extend across both. Construction activity will likely strip topsoil and result in localised compaction at compounds or due to heavy plant movements. This could lead to an increase in runoff during rainfall events and mobilisation of sediment into local watercourses and/ or sewers. It could also locally reduce infiltration that could cumulatively affect groundwater resources.
- 12.19 Construction activity also requires several potentially harmful substances such as paints, hydrocarbons, oils and fuel to be used or stored on Site. Leaks, spills and accidents may introduce these to the water environment and impacts should be assessed accordingly.
- 12.20 The development proposals for the A29 realignment will include at least 1 major crossing of the watercourse and its floodplain. Such a crossing could have an impact on the hydromorphological, ecological and chemical quality of the watercourse and its potential designation under the Water Framework Directive. Impacts will be expected during both the construction and operational phase of the crossing, and early engagement will ensure that as many impacts can be mitigated through design at the earliest opportunity.
- 12.21 The operational development has the potential to impact the Lidsey Rife and other local watercourses through localised changes to their route or form, floodplain dynamics and alterations to the topography and runoff characteristics of the catchment.
- 12.22 Site drainage will also be a key consideration in terms of environmental impacts, as development will increase impermeable surfaces and thus increase the rate and volume of runoff. It may also cause localised changes to infiltration and subsequently impact groundwater resources.
- 12.23 Drainage of foul water will also be assessed as part of the ES due to the additional loading on the existing systems and pressure this may apply to treatment processes. Many of the treatment works in the area discharge to the sea where special protection areas and nitrate neutrality zones exist, and it is understood from early engagement with key stakeholders that some environmental limits on local treatment works are already reached.

Potential Mitigation

- 12.24 The ES Chapter will identify any impacts that may be significant and require mitigation. This will be undertaken for impacts identified during the construction phase, and those required for the ongoing operational phase of the completed development.
- 12.25 The mitigation identified may be in addition to, or to complement any 'mitigation by design' required as an outcome of the Flood Risk Assessment and Sustainable Drainage Report that go on to inform design principles such as the surface water drainage strategy and layout considerations around floodplain extents.
- 12.26 In particular, the emerging masterplan already considers the Lidsey Rife floodplain, by ensuring no vulnerable development is located within the areas at risk and affords a suitable corridor around all other minor watercourses within the Site.

- 12.27 The 'School Stream', a watercourse in the north-east corner of the Site currently flows in culvert before emerging south of the railway and this is likely to be daylighted as part of the proposals and is incorporated into the Framework Masterplan.
- 12.28 The A29 realignment crosses the Lidsey Rife at a key location south of the railway line, and early work is already inputting into an appropriate crossing profile, such as ensuring the structure is sufficiently raised above the appropriate flood level and has minimal impact on the floodplain.

Summary

- 12.29 The Water Environment Chapter will be supported in its assessment through the production of a Flood Risk Assessment and Sustainable Drainage Report each of which will be written in accordance with the relevant prevailing guidance and local and national policy.
- 12.30 The baseline environment will be identified through the use of site visit observations, third party datasets and published reports. In addition to this, groundwater monitoring has been installed across the Site in locations agreed with Arun District Council and West Sussex County Council drainage engineers since October 2019 in accordance with local policy to establish key groundwater information.
- 12.31 As part of the ES, the significance of effects will be appraised by a qualitative analysis using the sensitivity of receptors to change and the magnitude of each impact identified. These effects will be considered for both the construction and operational phases and will also include cumulative impacts.
- 12.32 Any significant effects will require mitigation that will be identified and may be in addition to, or complement any 'mitigation by design' required as an outcome of the Flood Risk Assessment and Sustainable Drainage Report.

13.0 **Socio-Economics**

13.1 The purpose of this chapter will be to assess the potentially significant socio-economic effects of the proposed development. The chapter will consider potential socio-economic effects during the construction and operational phases of the proposed development, with effects assessed in the context of policy and literature relevant to socio-economic assessments and a baseline of existing and future socio-economic conditions. The chapter will be authored by Ciaran Gunne-Jones and James Tindale of Lichfields, who are experienced in the preparation of socio-economic assessments for a range of development projects across the UK.

13.2 Considering the scale and nature of the proposed development, scoping in a socio-economic assessment is advised. The proposed development has the potential to generate a variety of potentially significant socio-economic effects including through additional employment and housing.

Current Conditions

13.3 No work has been undertaken to date to identify the existing baseline characteristics of the area surrounding the Site of the proposed development. This analysis will be undertaken during the preparation of the full ES chapter.

Methodological Approach

13.4 The proposed scope of works to support the proposed development will comprise a socio-economics EIA chapter, rather than a standalone report to accompany the application. The chapter will comprise sub-sections as follows:

- 1 review of policy and literature relevant to the assessment of socio-economic effects;
- 2 set out impact areas and the methodology for defining the scale and significance of effects and what consultation has been undertaken relevant to the assessment;
- 3 analyse the existing and future baseline socio-economic conditions in the impact areas selected for assessment;
- 4 assess the socio-economic effects of the proposed development during construction and operation, and
- 5 consider the socio-economic effects of the proposed development in the context of potential mitigation measures to reach a set of final residual effects.

13.5 Further details on how each section will be undertaken are presented below.

Planning Policy and Literature Review

13.6 The planning policy and literature review will look at documents from the national, regional and local contexts. Considering the location of the proposed development, the most relevant documents will likely originate from the UK Government and Arun District Council and include the following:

- National Planning Policy Framework (2019);
- National Planning Practice Guidance (2020);
- Arun Local Plan (2018); and
- Arun Open Space, Playing Pitches, Indoor and Built Sports Facilities Supplementary Planning Document (SPD) (2020).

Assessment Methodology and Impact Areas

- 13.7 This sub-section will firstly outline the impact areas which are the zones where the socio-economic effects of the proposed development will be felt the most strongly. These will be confirmed in the ES chapter; however, it is likely a local impact area consisting of lower-level geographies (e.g. local super output areas (LSOAs)) and Arun District as a wider impact area will be considered in the chapter.
- 13.8 The evaluation of the effects of the proposed development will be based on an assessment of the magnitude of the impact and the importance of identified receptors. The scale of effects will be identified on a matrix basis from major adverse through to major beneficial, representing the scale of an effect beyond the baseline position. Where possible, the scale of each effect will be quantified concerning current conditions; however, as there is no standardised format for assessing socio-economics effects, some of the assessment will be based on professional judgement. Effects of a moderate or major scale will be considered as significant, with effects of negligible or minor scale being non-significant.

Existing and Future Baseline Conditions

- 13.9 The baseline section will consider the existing and future baseline conditions of different impact areas surrounding the proposed development. It is expected the baseline section will at a minimum consider the following baseline conditions:
- Demographic characteristics such as population age structure, qualifications, economic activity and unemployment;
 - Economic characteristics such as the sectoral structure of the economy and commuting patterns;
 - Housing market conditions such as the existing supply, recent delivery of homes and projected future demand;
 - Supply of the following items of social infrastructure:
 - a Early years care;
 - b Primary education;
 - c Secondary education;
 - d Primary healthcare (e.g. GP surgeries and dental practices) and secondary healthcare;
 - e Community halls;
 - f Leisure and recreation facilities;
 - g Open space; and
 - h Playspace.
- 13.10 Information about these conditions will be drawn from multiple sources including the Office for National Statistics (ONS) Annual Population Survey, 2011 Census and Business Register and Employment Survey; Department for Education (DfE) Schools Census; NHS General Practice Workforce dataset; and Active Places Power sports facility information portal. It is also expected information will be drawn from certain documents in the Council's evidence base such as the Arun Open Space Study (2016).

Assessment of Socio-Economic Effects

- 13.11 The socio-economic assessment will consider at a minimum the following potentially significant effects of the proposed development on receptors within surrounding impact areas:

- Direct, indirect and induced employment generated during the construction phase;
- Direct, indirect and induced employment generated during the operational phase;
- Effect of the proposed development on the local labour market;
- Effect of the proposed development on the population;
- Effect of the proposed development on housing;
- Effect of the proposed development on social infrastructure including the following typologies:
 - (a) Early years care;
 - (b) Primary education;
 - (c) Secondary education;
 - (d) Primary and secondary healthcare;
 - (e) Community halls;
 - (f) Leisure and recreation facilities;
 - (g) Open space; and
 - (h) Playspace.

13.12 These effects will be assessed using assumptions and information from industry recognised guides and sources such as the Homes and Communities Agency (HCA) Employment Density Guide (2015), HCA Calculating Cost Per Job Best Practice Note (2015) and UK Government GDP Deflator (2020). The assessment will confirm what significant and non-significant socio-economic effects the proposed development could have before non-embedded mitigation measures are considered.

Residual Effects

13.13 This section of the chapter will consider what non-embedded measures could be applied to mitigate significant adverse effects and enhance significant beneficial effects. After this process, the confirmed residual effects of the proposed development will be presented in a final summary table at the end of the chapter.

Anticipated Effects

13.14 Considering the scale and nature of the proposed development, it is anticipated the following potentially significant socio-economic effects could be generated without detailed consideration of baseline conditions, embedded mitigation measures and further mitigation measures:

- Direct, indirect and induced employment generated during the construction phase;
- Direct, indirect and induced employment generated during the operational phase;
- Effect of the proposed development on the local labour market;
- Effect of the proposed development on the population; and
- Effect of the proposed development on housing.

13.15 The proposed development could also have significant effects on certain types of social infrastructure; however, a detailed understanding of baseline conditions is required before this can be fully understood.

Potential Mitigation

- 13.16 No potential mitigation measures have been considered at this stage. Potential measures will be considered in full while preparing the full ES chapter.

Summary

- 13.17 It is considered appropriate to scope in socio-economics as an ES chapter rather than as a standalone report to support the application. The chapter will consider multiple types of socio-economic effects in the context of literature, planning policy and baseline conditions, with anticipated potentially significant effects linked to employment generated during construction and operation, the labour market, change in population and new housing.

14.0 Climate Change and Resilience

- 14.1 This Chapter of the ES will identify, describe and assess the likely significant environmental effects arising from the construction and operation of the Proposed Development in relation to climate change. The Chapter will be prepared by Hoare Lea and will be supported by further detailed information contained within standalone Sustainability and Energy strategies, also prepared by Hoare Lea, submitted as part of the planning application.

Climate change is the most pressing environmental issue currently facing humanity. IEMA stipulates² that GHG emissions should be assessed and reported as part of a good practice approach to EIA. This aligns with IEMA's overarching principles that "all GHG emissions will contribute to climate change and thus might be considered significant..."

Current Conditions

- 14.2 No baseline studies/ surveys have been deemed necessary for the purposes of the Climate Change ES chapter.
- 14.3 The assessment will consider local (Arun District Council / West Sussex) and regional (South East) GHG emissions data as part of the review of baseline conditions, to help contextualise the emissions generated by the Proposed Development and implement a proportional approach to the later evaluation of effects. GHG emissions observed at local and regional level will be sourced from UK national statistics collated by the Department for Business, Energy & Industrial Strategy (BEIS)³.

Methodological Approach

- 14.4 There is no standard methodology for identifying and assessing the significance of GHG emissions within the EIA process. This assessment will follow the recommendations and best practice contained within the IEMA Principles Series: Climate Change Mitigation & EIA (2010)⁴, IEMA (2016) Environmental Impact Assessment Guide to: Delivering Quality Development⁵ and IEMA Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating Their Significance (2017). It will also review a list of key legislative instruments and national and local planning policy and related guidance to inform the approach and impact significance classification. The list includes but is not limited to:
- Climate Change Act 2008⁶;
 - The Climate Change Act 2008 (2050 Target Amendment) Order⁷; and
 - UK Climate Change Risk Assessment (2017)⁸.

² IEMA & Arup (2017) Environmental Impact Guide to: Assessing Greenhouse Gas Emissions and Evaluating Their Significance. Available at <https://bit.ly/2RHYQoG> [Accessed: 18/08/2020].

³ Department for Business, Energy & Industrial Strategy (2020) Statistics UK local authority and regional carbon dioxide emissions national statistics: 2005-2018. Available at: <https://bit.ly/2ZKna1C> [Accessed: 18/08/2020].

⁴ IEMA (2010) Principles Series: Climate Change Mitigation and EIA. Available at: <https://bit.ly/2QCnd8v> [Accessed: 29/04/2020].

⁵ IEMA (2016). Environmental Impact Assessment Guide to: Delivering Quality Development. Available at: <https://bit.ly/2yinH09> [Accessed: 29/04/2020].

⁶ Climate Change Act (2008). Available at: <https://bit.ly/2H3m2kk> [Accessed: 18/08/2020].

⁷ The Climate Change Act 2008 (2050 Target Amendment) Order 2019. Available at: <https://bit.ly/2LFL3Te> [Accessed: 18/08/2020].

⁸ UK Climate Change Risk Assessment (2017). Available at: <https://bit.ly/2Rq3Rwm> [Accessed: 18/08/2020]

14.5 The following planning policy and guidance will also inform the assessment of effects within this Chapter:

- Part L 2013 of the Building Regulations (Conservation of fuel and power)⁹;
- National Planning Policy Framework (NPPF) (2019)¹⁰;
- National Planning Practice Guidance on Climate Change¹¹;
- The Fifth Carbon Budget¹²;
- Arun Local Plan 2011-2031¹³;
- Arun District Design Guide – Supplementary Planning Document (SPD)¹⁴; and
- IEMA (2020) Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation¹⁵.

Construction

Embodied carbon in buildings

14.6 The assessment will include a preliminary appraisal of the likely embodied carbon of new buildings introduced as part of the Proposed Development.

14.7 Embodied carbon is the total carbon emissions generated to produce a built asset. It is often defined as the 'carbon emissions associated with energy consumption (embodied energy) and chemical processes during the extraction, manufacture, transportation, assembly, replacement and deconstruction of construction materials or products'.

14.8 Embodied carbon assessment is an area which has undergone significant development in recent years. Traditionally the greatest impact on an asset's whole life carbon has been associated with its operational phase. With the ongoing decarbonisation of the UK electricity grid, this trend is expected to shift and embodied carbon is expected to assume an ever-increasing significance in the overall carbon footprint of developments (made up of embodied and operational carbon emissions).

14.9 The embodied carbon associated with the building materials for the Proposed Development (as per lifecycle stages A1-A3 construction materials) will be quantified using the general guidance provided by the Royal Institution of Chartered Surveyors (RICS) set out in the RICS 2014¹⁶ and 2017¹⁷ papers alongside relevant market benchmark data as deemed appropriate.

⁹ Ministry of Housing, Communities & Local Government (2013) Conservation of fuel and power: Approved Document L. Statutory guidance. Available at: <https://bit.ly/2YcwQu5> [Accessed: 18/08/2020].

¹⁰ Ministry of Housing, Communities & Local Government (2019). Updated National Planning Policy Framework. Available at: <https://bit.ly/2Pn4c2o> [Accessed: 18/08/2020].

¹¹ Ministry of Housing, Communities & Local Government (2014) Planning Practice Guidance – Climate change. Available at: <https://bit.ly/2Rk6f5o> [Accessed: 18/08/2020].

¹² Committee on Climate Change (2015). The Fifth Carbon Budget. The next step towards a low-carbon economy. Available at <https://bit.ly/2mk6SbK> [Accessed: 18/08/2020].

¹³ Arun District Council (2018) Arun Local Plan 2011-2031. Available at: <https://bit.ly/3i7Y7lc> [Accessed: 18/08/2020].

¹⁴ Arun District Council (2020) Arun District Design Guide Supplementary Planning Document (SPD). Available at: <https://bit.ly/2PZAESM> [Accessed: 18/08/2020].

¹⁵ IEMA (2020) Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation Available at: <https://bit.ly/3oR8ea0> [Accessed: 18/08/2020].

¹⁶ RICS (2014) Methodology to calculate embodied carbon. 1st Edition. Available at <https://bit.ly/2HAlFd7> [Accessed: 18/08/2020].

¹⁷ RICS (2017) Whole life carbon assessment for the built environment. 1st Edition. Available at: <https://bit.ly/2NWvur6> [Accessed: 18/08/2020].

Fuel use in construction plant & associated facilities

- 14.10 At this stage of the project, it is likely that there will be limited information about specific plant and site office requirements. The parameters of any equipment utilised during the construction process will depend on the selected contractor. The RICS methodology, however, provides an allowance for construction site emissions, such as fuel use in mobile plant and equipment (as per lifecycle stage A5 (EN 15978)). In line with this and for completeness this assessment will apply a CO₂e/ £100k of project value factor in order to provide a preliminary estimation of the anticipated emissions generated by the construction plant and related equipment.

Operational

Regulated/unregulated CO₂ emissions from buildings

- 14.11 The assessment will review the estimated total operational energy of the Proposed Development. This is made up of regulated components – including heating, cooling, hot water, fans, pumps and lighting – and unregulated ones, such as IT equipment, plug-in devices and catering facilities.
- 14.12 Regulated energy uses are inherent in the design of a building. Estimated CO₂ emissions from regulated operational energy uses of buildings will be calculated from benchmarks based on modelling undertaken in line with Part L 2013 of the Building Regulations (Conservation of fuel and power).
- 14.13 Unregulated carbon emissions will likewise be calculated based on Part L of the Building Regulations. Although unregulated carbon emissions are not included within Part L targets, an estimate of unregulated energy consumption is still an output produced as part of this methodology.
- 14.14 The consideration of significance will be informed by an evaluation of the anticipated environment within which the Proposed Development is expected to exist driven by the electricity grid decarbonisation and the country's new legally binding "net-zero" carbon target for 2050 as well as the influence and validity of any assumptions adopted when undertaking the prediction of impacts. The UKCP18 climate projections for the UK will be used to help formulate suitable and forward-looking resilience and adaptation measures for the Proposed Development.
- 14.15 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor and the magnitude of change to determine significance, on a scale of large or high, medium, small or low and negligible. A blended quantitative-qualitative approach utilising professional judgement relying on standard GHG accounting and reporting principles will be adopted in the effect categorisation.
- 14.16 No subject-matter specific consultation has been deemed necessary at this stage prior to the issuing of a scoping opinion by Arun District Council.

Limitations and Assumptions

- 14.17 To ensure transparency within the EIA process, the following limitations and assumptions have been identified.
- The RICS benchmark values, which are proposed to be used to calculate the anticipated embodied carbon emissions associated with the Proposed Development, are based on broad building use type/ size. As such they may not be wholly representative of the project at detailed design. Nonetheless, the RICS factors are considered to be appropriate for an initial

analysis of the anticipated embodied carbon particularly given the nature of the scheme, i.e. it being a masterplan.

- The CO₂ emissions associated with the operational energy consumption will be estimated based on benchmark Part L data for different building types and indicative areas for different uses included in the Proposed Development. The Part L methodology uses standardised parameters, including operational profiles, ventilation rates, and heating and cooling setpoints, based on the building use, which may be different from how the buildings will operate in practice.

14.18 In line with IEMA guidance, activities which account for under 5% of the energy usage and, therefore, do not have a significant contribution to the overall energy consumption will be excluded from the assessment. These include:

- Temporary construction site accommodation;
- Refuse collection from public bins; and
- Street lighting, traffic signals and security cameras.

Anticipated Effects

14.19 The following sensitive receptors have been identified and will be assessed within the ES:

- Global climate.

14.20 The following effects shown in Table 15.1 have been identified and will be assessed within the EIA and reported in the ES.

Table 14.1 Likely Significant Effects

Likely Significant Effect	Applicable Phase
Embodied carbon in buildings (including fuel use in construction plant & associated facilities)	Construction
Regulated / unregulated CO ₂ emissions from buildings	Operation

Potential Mitigation

14.21 In arriving at the significance level of the identified likely significant environmental effects, 'primary' or 'built in' mitigation measures will be taken into consideration as inherent components of the Proposed Development.

Summary

14.22 This Chapter will review the key anticipated CO₂ emission sources for the Proposed Development, i.e. Embodied carbon in buildings (including fuel use in construction plant & associated facilities) during construction and Regulated / unregulated CO₂ emissions from buildings during operation.

15.0 **Ground Conditions and Soils**

- 15.1 Consideration has been given to issues associated with ground conditions, contamination and soils by Pell Frischmann and it is considered that this can be scoped out of the EIA.
- 15.2 The Site covers a significant area of a land north and south of the mainline Barnham to Chichester rail track. In view of the historical and current land use, it is considered that the potential for any risk of contamination for future users of the Site or environmental receptors is low. Given that intrusive site investigations shall be undertaken, and if necessary any remediation carried out, then these actions are deemed to reduce the potential risk to very low/ negligible. As such, significant environmental effects are not considered likely allowing for ground contamination to be scoped out.
- 15.3 This section of the scoping report provides further evidence to justify the view that this matter can be scoped out.

Current Conditions

- 15.4 Current conditions were assessed from the following data sources, albeit noted that some of the data sources do not cover the entire site and are mainly relevant to land north of the railway line:
- Groundsure Report GeoInsight Report*, dated Feb 2019
 - Groundsure EnviroInsight Report*, dated Feb 2019
 - Groundsure Historical Mapping*, dated Feb 2019
 - Phase 1 Geotechnical & Geoenvoronmental Desk Study*, dated March 2019
 - Zetica Preliminary UXO Risk Assessment.
 - British Geological Survey Map; 1:50,000 scale.
 - (* Data and reports refer to land north of railway line)

Geology

- 15.5 The general geology of the Site area is shown on the 1:50,000 geological map of Britain with further supporting geological information been obtained from the British Geological Survey (BGS) published borehole records and existing site investigation data where available. These data indicate that the Site is underlain superficial deposits consisting of Head and River Terrace Deposits, Raised Beach Deposits and local areas of Alluvium. All of these deposits are variously described as a gravel, sand, silt and clays. The published bedrock geology underlying the superficial deposits indicates the Site is underlain by London Clay.
- 15.6 A previous investigation and groundwater monitoring regime was conducted by WYG Limited in 2017 of the area north of the railway. This investigation encountered topsoil overlying Alluvium and/or River Terrace Deposits comprising of a mixture of clay, sand and gravel. London Clay was encountered at a depth of about 3m below ground level. Groundwater monitoring recorded groundwater levels varying between 0.65m and 1.74m below ground level over the year of monitoring which is indicative of a generally high groundwater level known to be present over the entire site.
- 15.7 There are several surface water features crossing the Site which can be considered as receptors from any potential contamination.

- 15.8 A review of the available historical mapping information indicates that the entire area is currently undeveloped farmland with no historical development of any significance being identified. As noted above, there has been some previous investigation of the land north of the railway, but there are no known investigations of the area south of the railway

Methodological Approach

- 15.9 Pell Frischmann are preparing the following documents which will be submitted as standalone documents alongside the planning application.
- 1 A preliminary risk assessment which shall identify all previous uses potential contaminants associated with those uses a conceptual model of the Site indicating sources, pathways and receptors potentially unacceptable risks arising from contamination at the Site.
 - 2 A site investigation scheme, based on (1) to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site.
 - 3 The site investigation results and the detailed risk assessment (2) and, based on these, an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken.
 - 4 A verification plan if required providing details of the data that will be collected in order to demonstrate that the works set out in (3) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action.

Anticipated Effects

- 15.10 Key receptors on and around the Site include:
- Human health receptors: Future site users/ occupiers (residential and public open space); construction workers, adjoining site users
 - Environment: Aquifers within the River Terrace Deposits, and underlying strata; surface waters (drainage ditches typically present as field boundary markers)
 - Infrastructure associated with the new development: Concrete, water supply pipes, gas/ vapour ingress.

Construction phase

- 15.11 The primary receptors to be considered during the construction phase are the construction workers and surrounding land users. These receptors are at potential risk from direct contact (or via wind-blown migration of dusts/ fibres) with Made Ground during disturbance. However, significant contamination has not been identified and considered unlikely to be present in shallow soils, and would be mitigated by use of appropriate Personal Protective Equipment (PPE) regardless.
- 15.12 UXO risks will be further assessed ahead of any intrusive works but it is considered to be low risk. The water environment is also a key receptor and will be considered in the design and through controls implemented through a Construction Environmental Management Plan (e.g. bunded and covered fuel/ materials storage away from surface water receptors).

Operational phase

- 15.13 It is not anticipated that the operation of the proposed development will have any significant impact upon ground conditions. Any fuels or chemicals stored on site will be undertaken in accordance with best practice to avoid uncontrolled release of such to the environment

Potential Mitigation

- 15.14 Based on existing data, whereby no significant contamination has been identified, this is likely to comprise a reactive remediation strategy to address unforeseen deleterious ground conditions should such be uncovered during the construction works. It is also noted that some areas of the Site lie within a potentially Radon affected area (maximum potential 1-3%) and as such Radon potential shall be checked on an area by area basis.

Summary

- 15.15 Some site specific information is available for the area of the Site north of the railway line, however this area and the other areas of the Site are currently the focus of a site wide Phase 1 Preliminary Risk Assessment with regard to contaminated land. However, based on the information available it is considered unlikely that the Site would pose any significant risk of contamination and as further works are planned to quantify the potential contamination risk it is recommended that the Ground Conditions, Contamination and Soils can be scoped out of the EIA.

16.0 Health

- 16.1 Consideration has been given to whether health should be considered as a distinct environmental aspect in the EIA. It is considered that it can be scoped out and that key features will already be addressed under other chapters in the ES.
- 16.2 The main body of the proposed development is bordered by the settlements of Barnham, Eastergate, Westergate and Woodgate, and the West Coastway Line. The planned roadway extends south of the West Coastway Line and is bordered primarily by agricultural land. The area within the red line boundary includes agricultural land, existing roadways and areas of glasshouses.
- 16.3 The existing land uses that border the northern part of the Site boundary contain some sensitive land uses such as residential properties and a primary school (St Phillip Howard Catholic School). However, it is expected any potential health effects linked to the proposed development on these potentially sensitive receptors would be considered in other chapters of the ES including noise, air quality and water resources. An assessment of the effect of the proposed development on health infrastructure and other local facilities (e.g. GPs, dentists and schools) would be included within the socio-economics ES chapter. The land uses within the red line boundary are not considered to contain any potentially sensitive receptors in relation to health effects.
- 16.4 There may be significant beneficial health effects resulting from the development of high-quality residential properties and new open spaces. There will also be beneficial effects on the population due to the increase in employment opportunities during the construction and operational phases of the proposed development.
- 16.5 The increased population may result in effects to the local population concerning the availability and capacity of public health services resulting from the introduction of additional residential properties which may increase demand for public health services. However, as noted above, these effects will be assessed as part of the socio-economics chapter.
- 16.6 On this basis, it is considered that the likely effects on human health will be adequately assessed within other applicable areas of the ES and therefore it is not deemed necessary to provide a standalone chapter.

17.0 Other Matters for Consideration

Energy and Utilities

- 17.1 Most new developments require connection to existing utility services, including electricity and gas supplies, water supply, and Telecoms. Based on initial site assessments, it has been concluded that there are no onerous infrastructure constraints associated with gas provision and no restrictions which are likely to create significant environmental effects. Existing infrastructure will be designed around or diverted, and upgraded where necessary.
- 17.2 Water supply and drainage will require some further consideration; however, both of these matters will be addressed as part of the wider Water Environment chapter.
- 17.3 Against this background, and other initial site assessments, it has been concluded that there are no infrastructure constraints associated with gas provision and in relation to telecommunications that would require specific consideration as part of an EIA.

Agricultural Land

- 17.4 Most of the proposed development Site is or has been most recently in use for agriculture and farming. This use will be lost through the development of the Site.
- 17.5 Local planning authorities are required to take into account the presence of best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification ('ALC')) alongside other sustainability considerations when determining planning applications. For this ES, the Site is identified as having areas of grades 2, 3a and 3b, and in part, some areas of non-agricultural land (which includes farm steadings, buildings, watercourses, tracks and roadways). Initial assessments of the areas of the Site that will be subject to development suggest that the agricultural use is not considered of particular value or sensitivity. Given this context, it is not considered that the development will give rise to significant effects in respect of agriculture or soils that require consideration as part of the EIA.

Waste

- 17.6 The construction and operation of the scheme will inevitably give rise to some waste but the strategy for the development is to ensure that it is managed in accordance with the Waste Hierarchy of prevent, prepare for re-use, recycle, recovery and finally disposal. Compliance with environmental and waste legislation is a minimum requirement when managing waste and will be a primary objective of the development. During the construction period, there will be a requirement to produce a Site Waste Management Plan ('SWMP') under the Site Waste Management Plans Regulations 2008 and will be prepared in relation to this development. The plan will demonstrate how materials resource efficiency will be improved and to ensure that a fully auditable trail of waste removed from the Site is maintained.
- 17.7 Adoption of best practise measures will also be incorporated into the Construction Environmental Management Plan ('CEMP'), which will be in place prior to commencing any works on site. Information on waste management will be provided as part of the planning application submission.
- 17.8 During the operation of the Site, the sustainable management of waste will be secured by ensuring that opportunities for minimising waste together with the correct storage, removal and management of all waste streams is addressed robustly. It is acknowledged that further consultation will be necessary in due course with officers of the Council.

- 17.9 The measures in place and integral within the scheme are of a nature that will ensure that there is no potential for significant environmental effects requiring assessment as part of an EIA. Waste is therefore capable of being scoped out of the assessment.

Risk of Accidents and Disasters

- 17.10 There are no known matters which may give rise to significant impacts on the environment in association with the possibility of major accidents. Risks associated with those matters proposed to be included as part of the EIA will be considered where relevant (e.g. transport and water environment).

Daylight, Sunlight and Overshadowing

- 17.11 The majority of the existing Site comprises flat, arable land subdivided into large irregular fields by hedgerows and ditches, and existing properties surrounding the Site are limited to a small number of properties to the south east and north east of the Site. For these reasons it is not considered that there is any likelihood of adverse impacts in terms of daylight and overshadowing on existing properties.
- 17.12 As part of the master planning and design of the proposed development, lowest level windows within the residential accommodation have been considered in terms of acceptable levels of light, ability to maximise sunlight and passive solar energy in accordance with local policy. This will ensure that the outline parameters provide an appropriate basis from which to develop well-lit accommodation at the reserved matters stage. This will be explained within the Design and Access Statement to be submitted with the planning application.
- 17.13 Proposed areas of open space and amenity space adjacent to and within the development have been considerably designed in terms of overshadowing.
- 17.14 Given the above reasons, and the scale of the proposed development, it is not envisaged that the development will give rise to any materially adverse daylight and sunlight effects and therefore it is considered that daylight, sunlight and overshadowing can be scoped out of the EIA.

Wind Environment

- 17.15 The Site is currently open and devoid of any large structures. The change in massing, height and orientation of buildings associated with the development would be expected to influence the ground level wind speeds and direction on and adjacent to the Site from the existing conditions, however due to the open nature of the surroundings, it is not considered that the proposed development would alter the wind environment in the surrounding area to such an extent that it would give rise to significant environmental effects. The buildings proposed are of a modest scale, where the maximum number of storeys proposed is 4— and furthermore, the 4 storey buildings will only be a low percentage located within a defined parameter zone.
- 17.16 For these reasons, it is considered that wind environment with respect to impacts on pedestrian safety and comfort, and impacts on the stability of the proposed buildings, can be scoped out of the EIA.

18.0 General Approach and Form of the ES

Methodological Approach

- 18.1 The EIA will be prepared in accordance with the requirements of the 2017 EIA Regulations and with reference to best practice including that published by the Institute of Environmental Management and Assessment ('IEMA'). All information required or reasonably required to identify the significant environmental effects of the development, as defined by Schedule 4 of the Regulations will be provided as part of the ES.
- 18.2 The assessment will also include a consideration of relevant policy and legislation of relevance as well as considering comments received by consultees during the pre-submission period.
- 18.3 Each technical assessment will follow a consistent approach and format and including:
- 10 Brief review of relevant policy and legislative context;
 - 11 Confirmation of the detailed topic specific assessment methodology, consultation undertaken and confirmation on how the assessment relates to the standard significance criteria adopted for the EIA (see below);
 - 12 Consideration of Baseline Conditions including an identification of sources of information, site history, current environmental conditions and future trends/ anticipated changes to current conditions that could be anticipated without the scheme;
 - 13 Identification of the potential effects including a summary of those resources/ receptors likely to be affected, the sensitivity of those receptors to accommodate change; the degree of change resulting from the proposal; the change of events or pathways linking cause to effect and a prediction of the significance of effects in terms of nature, extent and magnitude including whether it is direct/indirect, short/ long term, permanent/ temporary, beneficial/ adverse;
 - 14 The scope for incorporating mitigation measures to avoid, reduce, remedy or compensate for any identified effects and the need for any monitoring measures; and
 - 15 Identification of any effects remaining after mitigation.
- 18.4 The effects of individual environmental matters will be transcribed against a common list of significance criteria for the EIA which will comprise:
- 16 Substantial beneficial¹⁸
 - 17 Moderate beneficial¹⁹
 - 18 Minor beneficial²⁰
 - 19 Neutral/ negligible
 - 20 Minor adverse
 - 21 Moderate adverse
 - 22 Substantial adverse
- 18.5 The ES will include a clear description of the likely significant environmental effects on the environment including direct/ indirect effects, secondary, cumulative, short/ medium/ long term, permanent/ temporary and beneficial/ adverse effects arising from the development.

¹⁸ Substantial – considerable effects (by extent, duration or magnitude) or of more than local significance or breaching identified standards or policy

¹⁹ Moderate – limited effects which may be considered significant

²⁰ Minor – slight, very short or highly localised effects

Structure and format of ES

18.6 The findings of the EIA will be set out in the ES which will comprise three volumes as follows:

- Volume 1 – Technical Assessments
- Volume 2 – Technical Figures and Appendices
- Volume 3 – Non-technical Summary

18.7 The following documents will be included as part of the ES appendices:

- Landscape and Visual Impact Assessment
- Transport Assessment
- Extended Phase 1 Ecological Survey
- Flood Risk Assessment and Drainage Strategy
- Lighting Assessment
- Archaeological desk based assessment

The team

18.8 The 2017 EIA Regulations requires that the EIA be prepared by competent experts. It is confirmed that the team undertaking the assessment work will have the relevant experience and competency to carry out the technical assessment work. The ES will include a statement on confirming how the requirements of the Regulations have been met.

18.9 The EIA will be co-ordinated by Lichfields with technical inputs to the EIA being provided by the relevant consultants as described in Section 5.0. Lichfields is accredited with an IEMA EIA 'Quality Mark' which is a scheme ensuring that EIA carried out by registrants achieves excellence.

Associated application

18.10 Notwithstanding the authority's view on the scope of the EIA, the application submission will also provide a range of information including:

- Planning Statement
- Design and Access Statement
- Statement of Community Involvement
- Ground Contamination Report
- Arboricultural Impact Assessment
- Affordable Housing Statement
- Agricultural Land Assessment
- Landscape Strategy
- Energy Strategy and Sustainability Statement
- Infrastructure Plan

19.0 **Summary**

19.1 This report has reviewed the various environmental effects associated with the proposed development and concludes that the following matters should be scoped into the EIA: -

- 1 Transport
- 2 Landscape and Views
- 3 Ecology
- 4 Air Quality
- 5 Noise and Vibration
- 6 Historic Built Environment
- 7 Archaeology
- 8 Water Environment and Drainage
- 9 Socio-Economics
- 10 Climate Change and Resilience

19.2 This report has also identified the following environmental aspects that are considered should be scoped out of the EIA process: -

- 1 Ground Conditions, contamination and soils
- 2 Health
- 3 Energy and Utilities
- 4 Waste
- 5 Agricultural Land
- 6 Risk of Accidents and Disasters
- 7 Daylight, Sunlight and Overshadowing
- 8 Wind Environment

Appendix 1 Site Location Plan

Notes:
 Do not scale from this drawing.
 All contractors must visit the site and be responsible for taking and checking dimensions.
 All construction information should be taken from figured dimensions only.
 Any discrepancies between drawings, specifications and site conditions must be brought to the attention of the supervising officer.
 This drawing and the works depicted are the copyright of JTP.

This drawing is for planning purposes only. It is not intended to be used for construction purposes. Whilst all reasonable efforts are used to ensure drawings are accurate, JTP accept no responsibility or liability for any reliance placed on, or use made of, this plan by anyone for purposes other than those stated above.

Key

ES Scoping Red Line Boundary

Total Area = 114.20 Ha

Please note: Boundaries indicating extent of land ownership are based on information provided by third parties and are to be treated as indicative only. JTP accept no liability or responsibility for conveying accurate information regarding land ownership - or measurement thereof.

D5	23.08.20	Amendments to boundary following consultant feedback	BY	GP
D4	17.08.20	Amendments to boundary following client comments. Updated A28 alignment	BY	GP
D3	26.06.20	Amendments to boundary following revised A28 alignment	BY	GP
D2	03.06.20	Amendments to boundary following consultant input on compound areas	BY	GP
D1	26.06.20	First issue	BY	GP

Rev	Date	Description	Drawn	Chkd
-----	------	-------------	-------	------

DRAFT

Client

The Church Commissioners for England, Hanbury Properties Ltd,

JTP Studio
 Unit 5, The Farm Warehouse
 Newington Street
 London, SE1W 3AP
 +44 (0)20 7517 1700
 www.jtp.co.uk

Project

Bamham, Eastergate & Westergate

Drawing Title

ES Scoping Red Line Boundary Plan

Scale @ A1 1:5000 Job Ref: 00605B

Drawing No. 00605B_S_02 Revision: D5

Scale Bar 0 50 100 150 200 250m

Appendix 2 LVIA Key Views and Methodology

BARNHAM, EASTERGATE, WESTERGATE

SCOPING REPORT, APPENDIX - LANDSCAPE AND VISUAL IMPACT ASSESSMENT: KEY VIEWS AND METHODOLOGY
JULY 2020

100

JOB NAME: BARNHAM, EASTERGATE, WESTGATE, WEST SUSSEX
JOB NUMBER: D2897
CLIENT: CHURCH COMMISSIONERS AND HARBURY ESTATES

REVISION	DATE	REVISION DETAILS	DESIGNED BY	CHECKED BY	DATE	DATE	DATE
DRAFT	04.02.20	DRAFT FOR CLIENT TEAM REVIEW	LS	LS	LS	LS	LS

INTRODUCTION

fabrik Chartered Landscape Architects have been appointed to carry out a Landscape and Visual Impact Assessment (L VIA) ES Chapter of the Application Site and its surrounding area. In order to assess the likely physical and visual impacts arising as a result of the proposed development.

The red line is illustrated on the plan opposite. Note: to be amended once finalised.

The methodology for the L VIA is based on the 'Guidelines for Landscape and Visual Impact Assessment' (third edition) by the Landscape Institute and Institute of Environmental Management and Assessment (Routledge, 2013). The full methodology is contained at Appendix 1

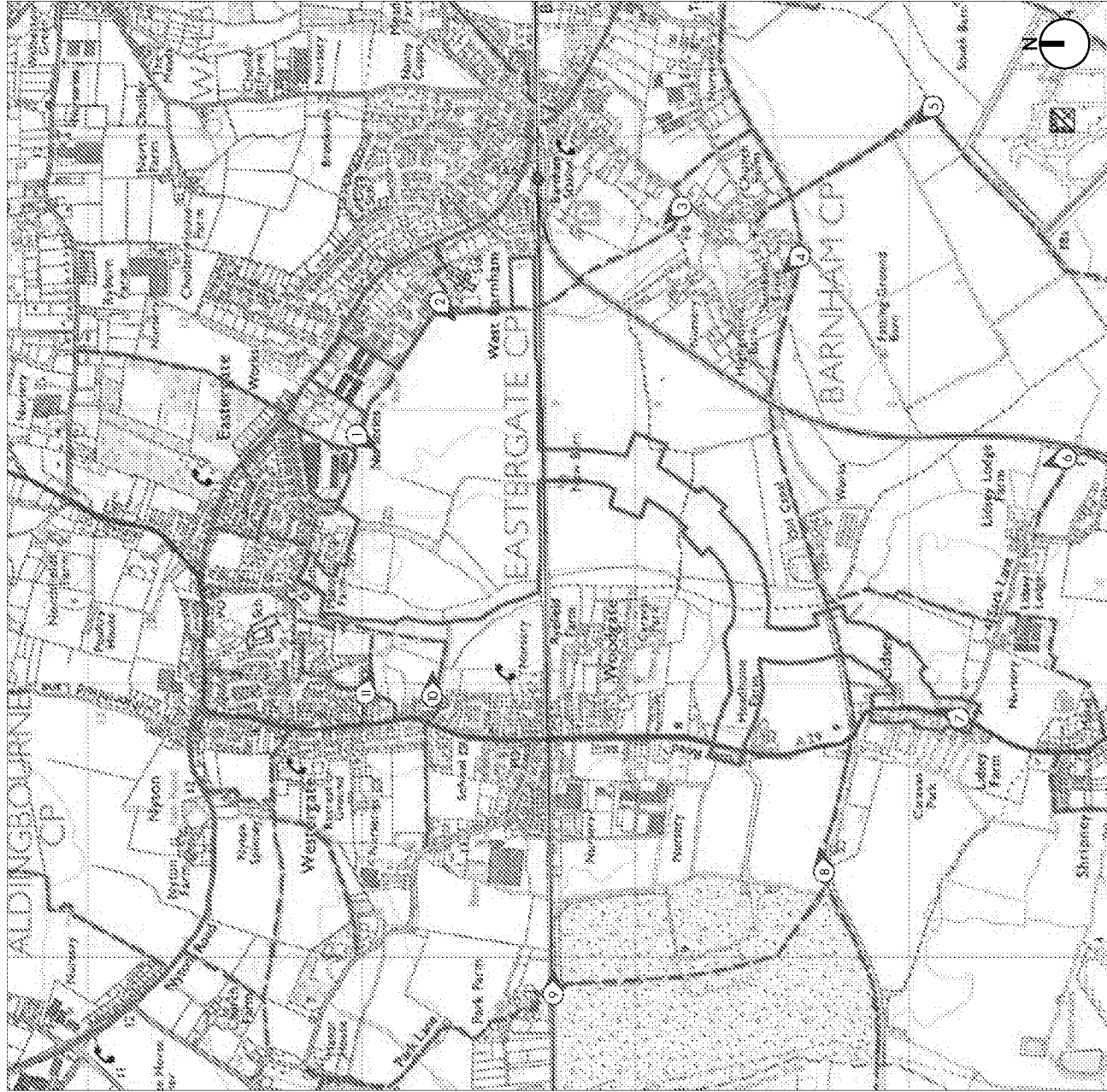
FIELD WORK

The field work records the combination of both built form and landscape elements within the Site; the contextual landscape elements; and identified a series of key representative visual receptors and where the views varied from open, partial, glimpsed to truncated.

A total of 21 viewpoints have been identified, the location of which are shown on the following pages

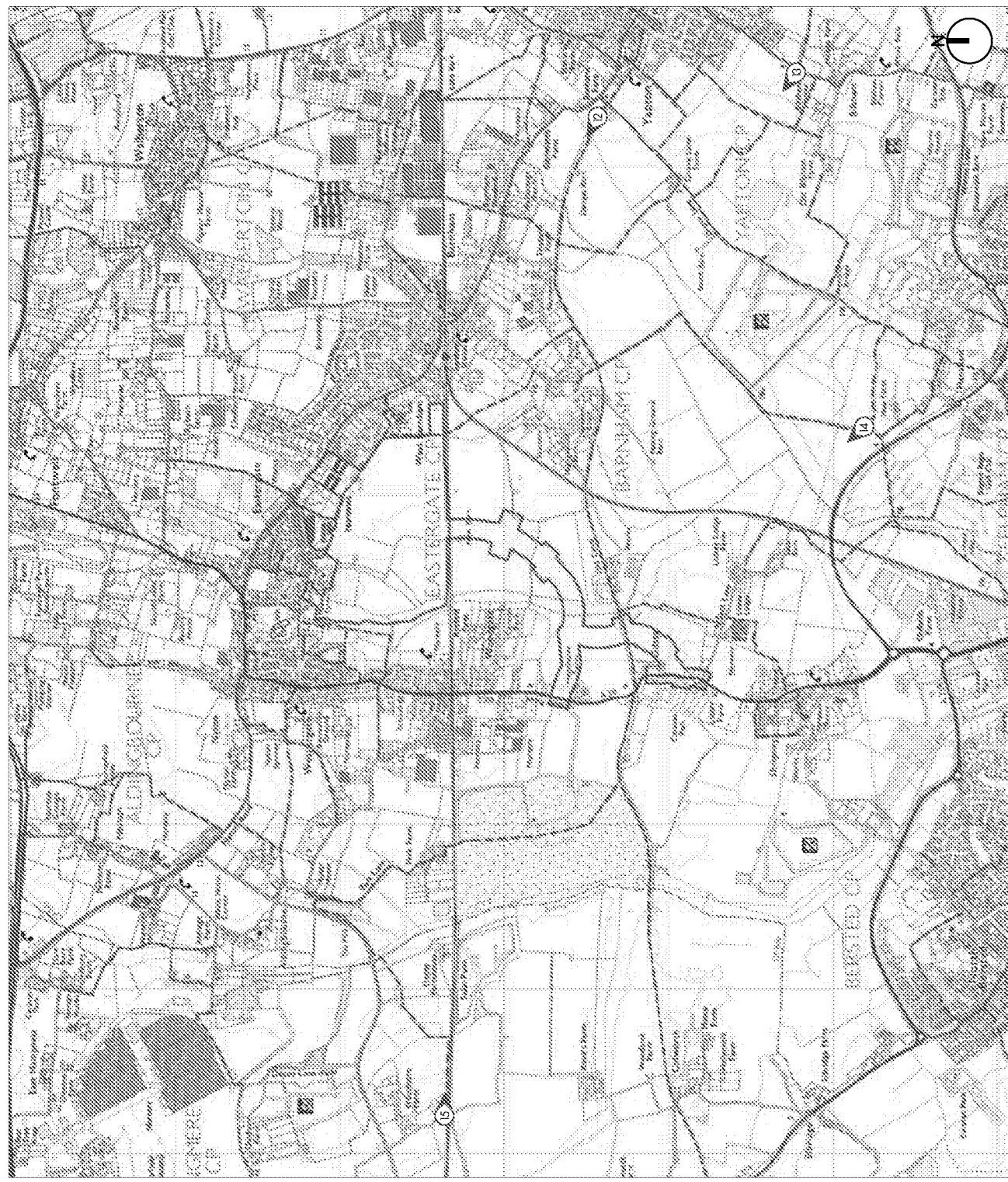
The agreed viewpoints will also be revisited in the winter, subject to programme

SUBJECT OF VISUAL RECEPTION (TYPE AND ASPECT/VIEW DIRECTION)	
Visual Receptor Type	Key Viewpoint Reference
Residential	2, 3, 4, 10, 11, 20
Transient from roads and associated pavements (Receptors in vehicles, on bike and foot)	3, 6, 13
Transient from Public Rights of Way (Receptors on foot, bike or horseback)	1, 2, 4, 5, 6, 8-12, 14, 18-21
Visitor Attractions (Receptors visiting Hainaker Windmill)	17
Scenic Viewpoints (Receptors visiting The Trundle)	16
Areas of Employment	1, 2



- LEGEND
- APPLICATION SITE BOUNDARY
 - VIEWPOINT LOCATIONS
 - FOOTPATHS
 - BRIDLEWAYS
 - SUSTRANS ROUTE 2

PLAN SHOWING VISUAL PROPOSED REPRESENTATIVE VIEWPOINTS FROM WITHIN THE SITE AND THE LOCAL ENVIRONS (FABRIK, 2020)



LEGEND

- APPLICATION SITE BOUNDARY
- VIEWPOINT LOCATIONS
- FOOTPATHS
- BRIDLEWAYS
- SUSTRANS ROUTE 2

PLAN SHOWING PROPOSED KEY REPRESENTATIVE VIEWPOINTS FROM MID-DISTANCE DISTANCE RECEPTORS (FABRIK, 2020)



PLAN SHOWING VISUAL PROPOSED KEY REPRESENTATIVE VIEWPOINTS FROM THE WIDER FABRIK 2020

- LEGEND
- APPLICATION SITE BOUNDARY
 - VIEWPOINT LOCATIONS
 - FOOTPATHS
 - BRIDLEWAYS
 - SUSTRANS ROUTE 2

A1.1 INTRODUCTION

The methodology employed in carrying out the LVIA for the Barnham, Easinggate, Westgate Site, is drawn from the Landscape Institute and the Institute of Environmental Management and Assessment's 'Guidelines for Landscape and Visual Impact Assessment' (3rd Edition (Routledge 2013). The method adopted is proportionate to the proposals.

The term landscape is defined as an area perceived by people, whose character is the result of the action and interaction of nature and / or human factors. It results from the way that different components of our environment – both natural and cultural / historical interact together and are perceived by us. The term does not mean just special, valued or designated landscapes and it does not only apply to the countryside. The definition of landscape can be classified as:

- All types of rural landscape, from high mountains and wild countryside to urban fringe farmland (rural landscapes);
- Marine and coastal landscapes (seascapes); and
- The landscape of villages, towns and cities (townscapes)

The LVIA will provide a description of the baseline conditions and sets out how the study area and site appears, or would appear, prior to the proposed development. The baseline assessment is then used to predict the landscape and visual impacts arising from the proposed development. The assessment of impact will be carried out as part of the iterative design process in order to build in mitigation measures to reduce the impacts as much as possible. The impact assessment will identify and assess effects during the stages of the proposed development (and in the case of this site the initial site enabling and construction stages and then at the operational phases).

The photography and preparation of any Verified Visual Montages (VVMs) will be prepared in accordance with Technical Guidance Note 16/19 on Visual Representation of Development Proposals (Landscape Institute, 17 September 2019).

A1.2 SUMMARY OVERVIEW OF LVIA METHODOLOGY

Landscape and visual assessments are separate, although linked, procedures. For example, often the assemblage of landscape elements contributes to informing the Zone of Theoretical Visibility and the degree of visibility from the range of visual receptors.

The baseline assessment describes:

- Each of the landscape elements which then collectively inform landscape character for the site and its context;
- The character, amenity and degree of openness of the view from a range of visual receptors (either transient, social or static views);
- The current and future baseline 'scenaria'; and
- The value of each of the landscape and visual receptors.

Landscape effects derive from either direct or indirect changes to the physical landscape which may give rise to changes to the individual landscape components. This in turn effects the landscape character and potentially changes how the landscape is experienced and valued.

Visual effects relate to the changes that arise in the composition, character and amenity of the view as a result of changes to the landscape elements.

The assessment of effects therefore systematically:

- Combines the value of the receptor with the susceptibility to the proposed change to determine the sensitivity of the receptor;
- Combines the size, scale, geographic extent, duration of the proposals and its reversibility in order to understand the magnitude of the proposal;
- Combines the sensitivity of the each of the receptors and the magnitude of effect to determine the significance of the effect;
- Presents the landscape and visual effects in a factual, logical, well-reasoned and objective fashion;
- Indicates the measures proposed over and above those designed into the scheme to prevent/avoid, reduce, offset, remedy, compensate for the effects (mitigation measures) or which provide an overall landscape and visual enhancement;
- Sets out any assumptions considered throughout the assessment of effects; and
- Sets out residual effects

Effects may be positive (beneficial) or negative (adverse) direct or indirect, residual, permanent or temporary short, medium or long term. They can also arise at different scales (national, regional, local or site level) and have different levels of significance (major, moderate, low, negligible or neutral / no change).

The combination of the above factors influences the professional judgement and opinion on the significance of the landscape and visual effects.

Cumulative effects of all other known development will also be considered following agreement with the LPA of those developments to be considered as part of the scoping opinion)

The following sections set out in more detail the assessment process employed.

A1.3 ESTABLISHING THE LANDSCAPE BASELINE

Desk and Field Studies

The initial step is to identify the existing landscape and visual resource in the vicinity of the proposed development – the baseline landscape and visual conditions. The purpose of baseline study is to record and analyse the existing landscape, in terms of its constituent elements, features, characteristics, geographic extent, historical and cultural associations, condition, the way the landscape is experienced and the value / importance of that particular landscape. The baseline assessment will also identify any potential changes likely to occur in the local landscape or townscapes which will change the characteristics of either the site or its setting.

A desk study will be carried out to establish the physical components of the local landscape and to broadly identify the boundaries of the study area. Ordnance survey (OS) maps and digital data will be used to identify local features relating to topography / drainage pattern, land cover, vegetation, built developments/settlement pattern, transport corridors/definitive public rights of way and any historic or prominent landscape features, which together combine to create a series of key characteristics and character areas. Vertical aerial photography and Google streetview will be used to supplement OS information. At this stage, any special designated landscapes (such as Areas of Outstanding Natural Beauty, National Parks, Green Belts, Conservation

Areas, Listed Buildings, Areas of Special Character), heritage or ecological assets are identified. A review of information available in terms of any published historic landscape characterisation together with any other landscape / capacity / urban fringe and visual related studies is carried out at this stage. In addition, a desk study of any unmet commitments will be incorporated.

Landscape character assessment is the tool for classifying the landscape into distinct character areas or types, which share common features and characteristics. There is a well established methodology developed in the UK by the Countryside Agency and Scottish Natural Heritage in 2002, which has been superseded in England by guidance published by Natural England in 2014. The national and regional level character assessments are often available in published documents. However the local / district or site levels may need to be set out based on a combination of desk studies and field survey work. The character assessment will also identify environmental and landscape opportunities, recent changes, future trends and forces for change where they may be important in relation to the proposal, especially considering how the landscape appears, or would appear prior to the commencement of development. The condition of the landscape i.e. the physical state of an individual area of landscape, will be described as factually as possible. The assessment of landscape importance includes reference to policy or designations as an indicator of recognised value, including specific features or characteristics that justify the designation of the area. The value of that landscape by different stakeholders or user groups may also influence the baseline assessment.

If published site level landscape character assessments are not available, or require to be updated to reflect the current circumstances, the landscape will be classified into distinctive character areas and / or types, based on variations in landform, land cover, vegetation / settlement pattern, field pattern, enclosure, condition, value. The classification will take into account any National, County/District and Parish level landscape character assessments.

These desk based studies are then used as a basis for verification in the field. The field based assessment also considers the perceptual qualities of the landscape, including tranquility.

Judgements on the value of both the landscape and visual receptor are made at the baseline stage.

Landscape Value

Value is concerned with the relative value or importance that is attached to different landscapes. The baseline assessment considers any environmental, historical and cultural aspects, physical and visual components together with any statutory and non-statutory designations and takes into account other values to society, which may be expressed by the local community or consultees. The tables set out on the following page are a starting point for consideration in the field. The landscape designations are to be considered in terms of their 'meaning' to today's context. The following table sets out the criteria and definitions used in the baseline assessment to determine landscape value (in addition to condition / quality).

TABLE A.1] - LANDSCAPE VALUE CRITERIA

LOW LANDSCAPE VALUE

- An exceptional landscape with outstanding perceptual qualities and sense of place (its wild and tranquil). An area that is wholly intact, natural and has high scenic qualities. It contains rare elements and features.
- Lies wholly within a designated landscape where localized character and scenic value is distinct. The landscape may include World Heritage Sites, National Parks, Areas of Outstanding Natural Beauty or Heritage Coast or Key elements/features that are representative together with any non-statutory designations. Alternatively, the landscape may be un-designated but is valued as it comprises all of the key elements that are wholly representative of published landscape character assessments and which, for example, identify nationally or locally significant natural, historical, artistic or cultural connections which assist in informing the identity of a local area (such as 'Constable Country' or 'Jurassic Coast'). Specific components of the landscape, or a specific tract of land may be valued at the local level as identified through Neighbourhood Plans or engagement with local stakeholders.
- An area that is valued for its recreational activity.
- Includes key or protected views.
- Areas designated and protected for archaeological, historical, cultural, geological or biological interest and conservation.
- A landscape that contains particular characteristics or elements particularly important to the character of the area, or where the typical character of the area is represented in individual areas.
- Very good or good condition overall with appropriate management for land use and land cover, or with some scope to improve certain elements.
- Open spaces which have won awards for design or quality.
- No or limited distracting features.

MEDIUM LANDSCAPE VALUE

- An ordinary landscape and with some perceptual qualities. Includes some intact natural areas and attributes, in part scenic or where scenic qualities are degraded and demonstrates a degree of wilderness and tranquility.
- The area lies wholly or partially in a designated landscape. The landscape may include local designations such as Special Landscape Areas, Areas of Great Landscape Value, Strategic or Local Coasts or un-designated but value expressed through regional or local natural, historical and / or cultural associations or through administrative use by the local community for recreation (such as local green spaces, village greens or allotments); together with any non-statutory designations. Alternatively, the landscape may be valued as it demonstrates some locally distinctive landscape elements identified in landscape character assessment.
- An area that is moderately valued for its recreation activity where the experience of the landscape plays a small part.
- Areas locally designated and protected for archaeological, historical, cultural, geological or biological interest and conservation.
- Distinguishable landscape structure, with some characteristic patterns and elements moderately important to the character of the area.
- Typical, commonplace farmed landscape with limited variety or distinctiveness.
- Open spaces or other features identified on a local list.
- Good - ordinary condition, with some high quality elements and scope to improve management.
- Some to improve management.
- Some distracting features.

LOW LANDSCAPE VALUE

- A poor landscape with limited perceptual qualities (limited natural attributes, sense of wilderness and tranquility).
- Generally un-designated. Certain individual landscape elements or features identified in landscape character assessments may be worthy of conservation or a landscape that would benefit from restoration or enhancement (such as local parks and open spaces). Alternatively, the landscape may be valued through the landscape character assessment approach where some key qualities are defined.
- An area where the landscape plays a limited role in the experience of recreation activities.
- Monotonous, weak, uniform or degraded landscape which has lost most of its natural features and where the landscape are often masked by land use.
- Lack of management and intervention has resulted in degradation.
- Ordinary - poor condition with lack of management.
- Frequent dominant distracting features.
- Disturbed or derelict land requires treatment.

Night Time Character Assessment

During the field survey stage it may be considered appropriate to carry out a baseline 'night time' 'walks' assessment to understand whether the site is currently influenced by lighting at night. This will assist in understanding the likely effects of the proposed on the night-time character and visual experience gained, especially considering those receptors immediately adjacent to the site or those travelling past the site.

A1.4 ESTABLISHING IN THE VISUAL BASELINE

Desk and Field Studies

The visual baseline will establish the area in which the site and the proposed development may be visible. The different groups of people who may experience the views, the places where they will be affected and the nature, character and amenity of these views.

The area of study for the visual assessment is determined through identifying the area from which the existing site and proposal may be visible (the Zone of Theoretical Visibility or ZTV). The baseline ZTV of the site has been determined through manual and computerized topographical analysis. The actual extent of visibility is checked in the field (both in the summer and winter months if the project timescales allow) to record the screening effect of buildings, walls, fences, trees, hedgerows and banks not identified in the initial base ground mapping stage and to provide an accurate baseline assessment of visibility. Viewpoints within the ZTV should also be identified during the desk assessment and the viewpoints used for photographs selected to demonstrate the relative visibility of the site (and any existing development) on it and its relationship with the surrounding landscape and built forms). The selection of a range of key viewpoints will be based on the following criteria for determination in the field:

- The requirement to provide an even spread of representative, specific, illustrative or static / kinetic / sequential / transient viewpoints within the ZTV and around all sides of the Site:
- From locations which represent a range of near, middle and long distance views (although the most distant views may be discounted in the impact assessment if it is judged that visibility will be extremely limited);
- Views from sensitive receptors within designated, historic or cultural landscapes or heritage assets (such as from within World Heritage Sites, adjacent to Listed Buildings - and co-ordinated with the heritage consultant - National Parks, Areas of Outstanding Natural Beauty or Registered Parks and Gardens); key tourist locations and public vantage points (such as viewpoints identified on OS maps);
- The inclusion of strategic / important / designed views and vistas identified in published documents;
- The selection of viewpoints considering cumulative views of the proposed development in conjunction with other developments (as agreed between the parties);
- Views from the following are to be included in the visual assessment:
- individual private dwellings. These are to be collected as representative viewpoints as it may not be practical to visit all properties that might be affected;
 - public buildings, where relevant (i.e. libraries, hospitals, churches, community halls etc);

Desk and field Studies Continued

- Transient views from public viewpoints (i.e. from roads, railway lines and Public Rights of Way - including tourist or scenic routes and associated viewpoints);
- Areas of publicly accessible green space (i.e. public open space, open access land, recreation grounds, country parks, visitor attractions, tourist destinations or scenic viewpoints); and
- Places of employment, are to be included in the assessment where relevant.

The final selection of the key viewpoints for inclusion in the LVA will be based proportionately in relation to the scale and nature of the development proposals and likely significant effects and in agreement with the LPA.

The visual assessment records:

- The character and amenity of the view, including topographic, geological and drainage features, woodland, tree and hedgerow cover, land use, field boundaries, artefacts, access and rights of way, direction of view and potential seasonal screening effects and any skyline elements or features.
- The type of view, whether oblique or direct; panoramic or vistas.
- The extent of visibility of the range of receptors is based on a grading of degrees of visibility, from a visual inspection of the site and surrounding area. There will be a continuity of degree of visibility ranging from no view of the site (truncated) to fully open views. Views are recorded, even if views are truncated of the existing site, as the proposed development may be visible in those views. To indicate the degree of visibility of the site from any location, three categories are used:

- Open View:**
An open, unobstructed and clear view of a significant proportion of the ground plane of the site; or its boundary elements; or a clear view of part of the site and its component elements in close proximity.
- Partial View**
A view or part of the site, a filtered or glimpsed view of the site, or a distant view where the site is perceived as a small part of the wider view.
- Truncated View:**
No view of the site or the site is difficult to perceive.

Following the field survey (which should cover ideally both winter and summer views) the extent to which the site is visible from the surrounding area will be mapped. A Photographic Viewpoint Plan will be prepared to illustrate the representative, specific and illustrative views into / towards and within the site (if publicly accessible) and the degree of visibility of the site noted. This Plan will be included in a Key Views document for agreement with the Local Planning Authority and any other statutory consultees as part of the consultation process. The visual assessment will include a series of annotated photographs, the location and extent of the site within the view together with identifying the character and amenity of the view, alongside any specific elements or important component features such as landform, buildings or vegetation or detracting features which interrupt, filter or otherwise influence views. The photograph will also be annotated with the Value attributed to the receptor or group of receptors.

By the end of this stage of the combined landscape and visual site study, it will be possible to advise, in landscape and visual terms, on any specific mitigation measures required in terms of the developments proffered, siting, layout and design.

Value of Visual Receptors

Judgements on the value attached to the views experienced are based on the following criteria

TABLE A1.2 – VALUE ATTACHED TO VIEWS

VALUE	CRITERIA
HIGH	Views from and to landscapes / viewpoints of national importance, or highly popular visitor attractions where the view forms a significant role in the visual experience, and / or has nationally recognised cultural associations. This may include residential receptors in Listed Buildings where the primary elevation of the dwelling is orientated to take advantage of a particular view (for example across a Registered Park and Garden or National Park).
MODERATE	Views from and to landscapes / viewpoints of regional / district importance or moderately popular visitor attractions where the view forms part of the experience, and / or has local cultural associations. This may include residential receptors where the primary elevation of the dwelling is orientated to take advantage of a particular view.
LOW	Views from and to landscapes / viewpoints with no designation, not particularly important and with minimal or no cultural associations. This may include views from the rear elevation of residential properties.

A1.5 PREDICTING & DESCRIBING THE LANDSCAPE & VISUAL EFFECTS

An assessment of visual effect deals with the change on the character and amenity arising from the proposal on the range of visual receptors.

The assessment of effects aims to:

- Identify systematically and separately the likely landscape and visual effects of the proposed development;
- Identify the components and elements of the landscape that are likely to be affected by the proposed development;
- Identify interactions between the landscape receptors and the different components of the development at all its different stages (e.g. enabling, construction, operation, restoration etc);
- Indicate the secondary mitigation measures over and above those already designed into the scheme proposed to avoid, reduce, remedy or compensate for these effects;
- Estimate the magnitude of the effects as accurately as possible and considering this in relation to the sensitivity of the receptor; and
- Provide an assessment of the significance of these effects in a logical and well-reasoned fashion.

Having established the value of the landscape and visual receptor, the effects are then considered in relation to the magnitude of change, which includes the size / scale, geographical extent of the areas influenced and the duration, permanence and reversibility.

Wherever possible tables or matrices will be used, linked with the scheme proposals (i.e. parameter plans or detailed plans) so that the landscape and visual effects are recorded and quantified in a systematic and logical manner. Consideration is given to the impacts during site enabling, construction and then again at the completion of development at Year 1 and again at Year 15 / at maturity (to represent short, medium and long term effects) so that the residual effects of the development after mitigation are identified. Assumptions or limitations to the assessment will also be set out.

Effects will include the direct and/or indirect impacts of the development on individual landscape elements / features as well as the effect upon the general landscape character and visual receptors.

Landscape Susceptibility

Landscape susceptibility is evaluated by its ability to accommodate the proposed change (i.e. the degree to which the landscape is able to accommodate the proposed change without undue consequences for the maintenance of the baseline situation and / or the achievement of landscape planning policies and strategies) as set out in Table A1.3.

As part of the assessment of the landscape character and its component parts, conclusions will be drawn as to the overall susceptibility of the landscape / landscapes elements and visual environment to the type of development proposed. Existing landscape capacity assessments may form a starting point for the refinement of the assessment of landscape susceptibility at the local and site level.

Visual Sensitivity

The sensitivity of visual receptor is based on the professional judgement combining the value and susceptibility to change on that visual receptor.

TABLE A1.6 - VISUAL SENSITIVITY

VALUE OF VISUAL RECEPTION	VISUAL RECEPTION SUSCEPTIBILITY			
	HIGH	MEDIUM	LOW	
HIGH	HIGH	HIGH - MEDIUM	MEDIUM	
MEDIUM	HIGH - MEDIUM	MEDIUM	LOW	
LOW	MEDIUM	LOW	LOW - NEGLIGIBLE	

A1.6 MAGNITUDE OF LANDSCAPE & VISUAL EFFECTS

Magnitude is to be determined relative to the size, scale, geographic extent, duration, permanence and reversibility of the individual project through the application of professional judgement and opinion.

Typically, the following are used:

Size and Scale: relates to the combination of the following (and are linked to the descriptions set out under table A1.5):

- the extent of existing landscape elements that will lost (to proportion of the total extent that is lost) and the contribution that the element has to landscape character;
- the degree to which aesthetic or perceptual aspects of the landscape are altered;
- whether the effect changes the key characteristics of the landscape (addition or removal of features and elements)
- the size and scale of change in the view (with respect to the loss or addition of features in the view) and changes to the composition, including the proportion of the view occupied by the proposed development;
- the degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristic terms of form, scale, mass, line, height, colour and texture; and
- the nature of the view of the proposed development, in terms of relative amount of time over which it will be experienced and whether views will be open, partial, glimpsed.

Geographic Extent: In relation to landscape effects, this is to consider the geographic area over which the landscape effects will be felt relative to the proposal: effects limited to the site level; effects on the immediate setting; effects relating to the scale of the landscape type or character area (district, regional or national level); effects on a larger scale such as influencing several landscape character areas

In relation to visual receptors, the geographic extent is to reflect the angle of the view; the distance of the viewpoint; the extent of the area over which the changes would be visible.

Duration, Permanence and Reversibility: These are separate but linked considerations and are project specific. Construction impacts are likely to be medium term, temporary, but see the start of a permanent change. Operational effects are likely to be long term, permanent and either irreversible or reversible, depending on the nature of the project and the element of the scheme being assessed

TABLE A1.7 - MAGNITUDE OF LANDSCAPE & VISUAL EFFECTS

MAGNITUDE ELEMENTS				
SIZE / SCALE	Geographic Extent	Duration and Permanence	Reversibility	Overall Magnitude of Change
Significant change to the landscape elements, key characteristic features and perceptual qualities. Significant change to a open or partial view (static or transient). A major change overall.	Proposal effects wider setting a district or regional level; effects the site level or immediate setting to the site; effects a single or several landscape character areas.	Permanent or Temporary (Long, medium or short term)	Irreversible or Reversible	High - Medium
Some change to the landscape elements, key characteristic features and perceptual qualities. Moderate or significant change to static or transient, partial view. A moderate change overall.	Middle distance or closer target' direct or oblique views, readily noticeable perceived change.	Permanent or Temporary (Long, medium or short term)	Irreversible or Reversible	Medium - Low
Small change to the landscape elements, key characteristic features and perceptual qualities. Small change to a static or transient partial or glimpsed view. A minor change overall.	Site or immediate setting to the site, effects a single or several landscape character areas.	Permanent or Temporary (Long, medium or short term)	Irreversible or Reversible	Low
Small, imperceptible change. Negligible.	Middle distance views, direct or oblique views; partially obscured views; moderately perceived change.	Permanent or Temporary (Long, medium or short term)	Irreversible or Reversible	Negligible

If there is no change to the landscape or visual receptor then the overall magnitude of change will be Neutral.

The degree of effect is graded on the following scale in relation to the significance criteria above.

A1.9 EFFECTS DURING OPERATION (AT YEAR 1 & YEAR 15)

At the operational stage, the sources of landscape and visual effects may include:

- The location, scale, height, mass and design of buildings in terms of elevational treatment, structures and processes, including any other features;
- Details of service arrangements such as storage areas or infrastructure elements and utilities and haulage routes;
- Access arrangements and traffic movements;
- Lighting;
- Car parking;
- The noise and movement of vehicles in terms of perceived effects on tranquillity;
- Signage and boundary treatments;
- Outdoor activities that may be visible;
- The operational landscape, including landform, structure planting, green infrastructure and hard landscape features; and
- Land management operations and objectives.

A1.10 MITIGATION AND COMPENSATORY MEASURES

The purpose of mitigation is to avoid, reduce and where possible, remedy or offset, any significant (major to moderate) negative (adverse) effects on the landscape and visual receptors arising from the proposed development. Mitigation is thus not solely concerned with "damage limitation", but may also consider measures that could compensate for unavoidable residual effects. Mitigation measures may be considered under three categories:

- Primary measures that intrinsically comprise part of the development design through an iterative process;
- Standard construction and operational management practices for avoiding and reducing environmental effects; and
- Secondary (or residual) measures designed to specifically address the remaining effects after the primary and standard construction practices have been incorporated.

A1.11 RESIDUAL EFFECTS

The residual effects of the proposed development are to be assessed. Residual effects consider any additional mitigation measures required to address specific landscape and visual sensitivities in place over and above the primary mitigation measures proposed and those already included and designed in to the scheme. The process of assessing residual effects is the same as assessing the primary effects.

A1.12 CUMULATIVE EFFECTS

Cumulative effects are defined as effects which result from additional changes to the landscape and visual receptors by the proposed development in conjunction with other developments (associated with or separate to it) or actions that occurred in the past, present or likely to occur in the foreseeable future.

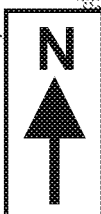
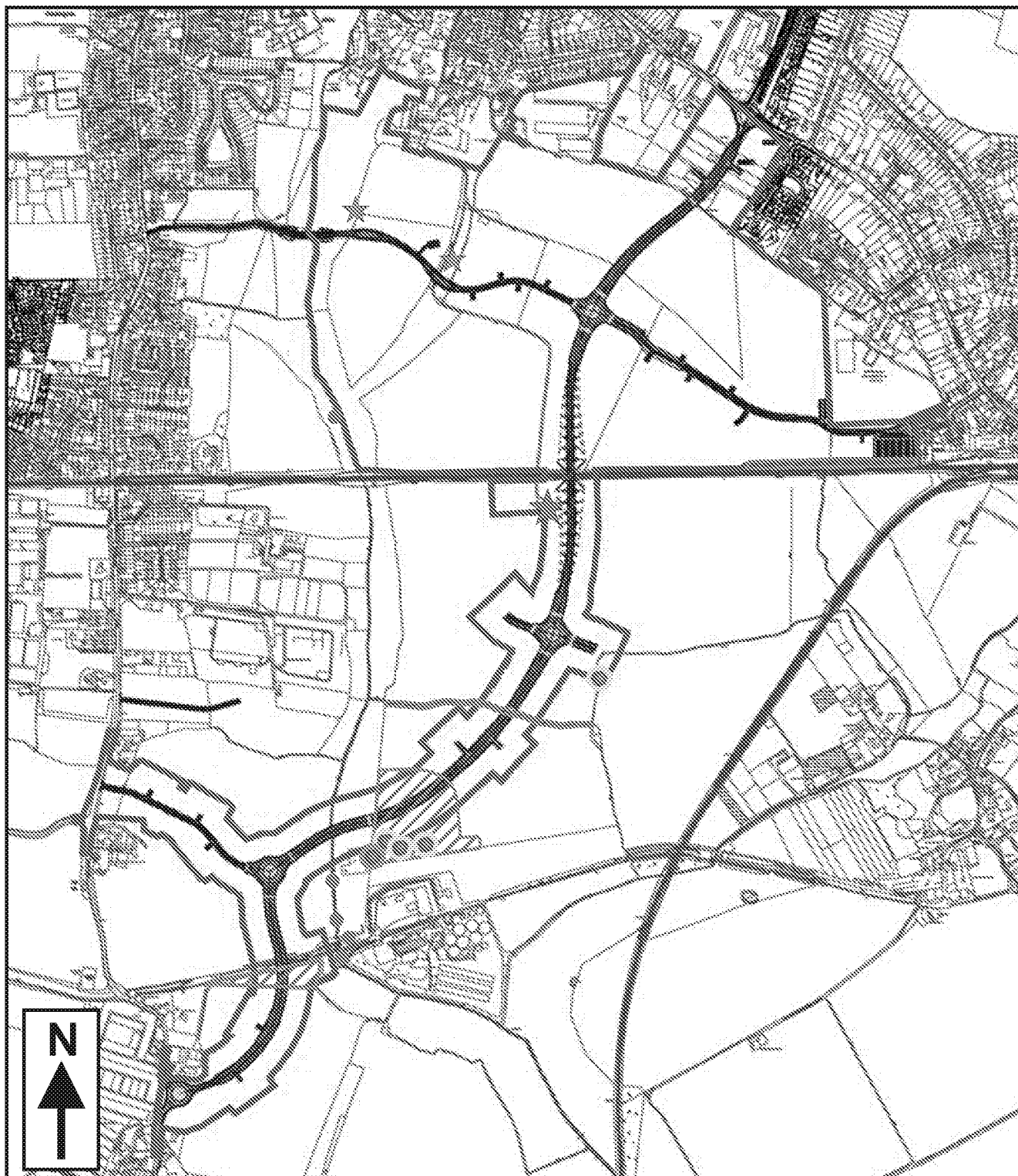
The scope of the developments to be included in the cumulative assessment are to be agreed with the LPA by the planning consultant and developer. Prescribed

approaches to the assessment, in terms of the baseline environment and defining the study area, are to be relative to the developments identified to be assessed and are to be agreed with the LPA at the outset.

Cumulative effects arise from the intervisibility of a range of developments and/or from the combined effects of individual components of the proposed development occurring in the different locations over a period of time. The separate effects of such individual components or developments may not be significant, but together they may create an unacceptable degree of adverse effect on landscape and visual receptors.

Whilst the assessment of effects are to be assessed on the same basis as set out previously in this methodology, visual effects occur by combined visibility which occurs where the observer is able to see two or more developments from one viewpoint and / or, where sequential effects which occur when the observer has to move to another viewpoint to see different developments.

Appendix 3 Plan of Ecological Features



KEY:

-  SITE BOUNDARY
-  WATER VOLE EVIDENCE
-  REPTILES PRESENT
-  POTENTIAL BADGER SETTS
-  BARN OWL WITHIN BARN
-  TREES WITH LOW BAT ROOSTING POTENTIAL
-  TREES WITH MODERATE BAT ROOSTING POTENTIAL
-  CETTI'S WARBLER SIGHTING



ECOLOGY SOLUTIONS
Part of the ES Group

Farncombe House
Farncombe Estate | Broadway
Worcestershire | WR12 7LJ

+44(0)1451 870767
info@ecologysolutions.co.uk
ecologysolutions.co.uk

**7908: LAND AT BARNHAM, EASTERGATE
& WESTERGATE**

**PLAN ECO1:
ECOLOGICAL FEATURES**

Rev: A
Sept 2020

Birmingham

Bristol

Cardiff

Edinburgh

Leeds

London

Manchester

Newcastle

Thames Valley



@LichfieldUK