



**LAND NORTH-WEST OF  
SOUTHWATER, HORSHAM**

**ENVIRONMENTAL STATEMENT  
VOLUME II, APPENDIX 1.1 EIA  
SCOPING REPORT**

**FEBRUARY 2026**

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# 1 INTRODUCTION

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## 1.1 BACKGROUND

- 1.1.1. The Applicant (Berkeley Strategic) intends to submit an outline planning application for a residential-led development to provide up to 1,000 homes (a mix of C2 and C3 use classes), an employment area, local retail, community and leisure facilities, provision for nursery, primary and secondary school, gypsy and traveller pitches, landscaping, open space and new road improvements (hereafter referred to as the 'Proposed Development'). The Site is located west of and adjacent to Southwater, West Sussex and is located within the administrative area of Horsham District Council (HDC) (please refer to **Figure 1 – Site Location Plan** in **Appendix 1.1**).
- 1.1.2. The Application will be supported by an Environmental Statement (ES), along with a suite of other documents, including application forms, certificates, plans, drawings and technical reports. These reports will be submitted with the aim of assisting the planning authority and consultees in understanding and evaluating the Proposed Development.
- 1.1.3. The anticipated planning application boundary (the 'Site') is shown in **Figure 1 – Site Location Plan** in **Appendix 1.1**. The Site is approximately 141 hectares (ha) in size and is split into a main site and a smaller area; the car park site near Christ's Hospital Station is approximately 1.35ha in size. The Site is bounded by the A24 to the north, Worthing Road to the east, Bonfire Hill to the south and Marlpost Road and Two Mile Ash Road to the west.
- 1.1.4. This report has been co-ordinated and prepared by WSP, with chapters prepared by WSP unless stated otherwise below:
- RPS Group/Tetra Tech – Cultural Heritage;
  - Hankinson Duckett Associates (HDA) – Ecology;
  - Ruskins Tree Consultancy - Arboriculture;
  - Fabrik – Landscape and Visual; and
  - Geo-Environmental Services Ltd. (GESL) – Ground Conditions and Contamination.
- 1.1.5. A previous iteration of the masterplan was scoped, consulted on and assessed as part of an ES. Some chapters may refer to assessments undertaken, and data collected for the previous masterplan.

## 1.2 DEFINITION OF AN ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

- 1.2.1. The term 'Environmental Impact Assessment' ('EIA') describes a procedure that must be followed for certain types of projects before it can be given 'consent'. The procedure is a means of drawing together, in a systematic way, an assessment of a project's likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for avoiding, preventing, reducing or, if possible, offsetting them are properly understood by the public and the authority granting consent (the 'determining authority') before it makes its decision.

### 1.3 REQUIREMENT FOR ENVIRONMENTAL IMPACT ASSESSMENT

- 1.3.1. The Town and Country Planning Act (Environmental Impact Assessment) Regulations 2017 (“EIA Regulations”) (**Ref. 1.1**) sets out the types of development which must be subject to an EIA (referred to as a Schedule 1 development) and other developments which may require assessments if they give rise to significant effects (referred to as Schedule 2 development).
- 1.3.2. The Proposed Development does not fall under any of the development types listed under Schedule 1 of the EIA Regulations. The Proposed Development falls under Schedule 2, category 10(b) Urban Development Projects, as the Site exceeds the criteria set out below according to the EIA Regulations 2017:
  - 1.3.3. *(i) The development includes more than 1 hectare of urban development which is not dwelling house development; or*
  - 1.3.4. *(ii) the development includes more than 150 dwellings; or*
  - 1.3.5. *(iii) the overall area of the development exceeds 5 hectares.”*
- 1.3.6. The site covers an area of approximately 141 hectares. As such, preparation of an Environmental Statement (ES) is required to accompany the planning application. The ES will detail the potential significant temporary and permanent environmental impacts of the Proposed Development

### 1.4 PURPOSE OF THE REPORT

- 1.4.1. The purpose of this report is to ensure that the subsequent EIA is focused on the key impacts likely to give rise to significant adverse effects, and to obtain agreement on the EIA approach and scope. As well as identifying elements to be considered in the EIA, this report also identifies those elements that are not considered necessary to assess further. This approach is in line with the general aim to undertake proportionate EIA, as advocated by industry best practice.
- 1.4.2. Whilst this report seeks to establish the overall framework for the EIA in relation to the environmental factors and associated effects, the exact scope of the EIA will be influenced by the scoping opinion received, the on-going design evolution of the project, and through on-going baseline data collection (e.g. field surveys etc.).
- 1.4.3. **Table 1-1** below sets out what information the EIA Regulations state that a request for a scoping opinion must include and where this information can be found in this report.

**Table 1-1 - Information required to accompany a request for Scoping Opinion**

Information Required	Location within this report
A plan sufficient to identify the land	Appendix 1.1
A description of the nature and purpose of the development, including its location and technical capacity	Chapters 1 and 2 of this Report
An explanation of the likely significant effects of the development on the environment	Chapters 5-14 of this Report

Information Required	Location within this report
Such other information or representations as the person making the request may wish to provide or make	Table 1-2

1.4.7. Additional information is set out in **Table 1-2**, in relation to ‘such other information or representations as the person making the request may wish to provide or make.

**Table 1-2 - Other information provided within this Scoping Request**

Information	Location within this Report
An overview of the conditions present on Site and within the surrounding area, together with a brief overview of the relevant planning policy context.	Chapters 1,2 and 3 of this Report
Outline of the scope and assessment methodology (including the significance criteria to be adopted) for assessing the likely significant environmental effects to be employed for each discipline to be reported in the ES.	Chapter 5 -14 of this Report
The approach to considering alternatives	Chapter 3 of this Report
The approach to the cumulative assessment	Chapter 15 of this Report
The proposed approach to the EIA and an appraisal of the key environmental issues to be covered in the EIA (i.e. “scoped in”) and the issues not requiring further consideration (i.e. “scoped out”).	Chapters 3-14 of this Report
The proposed structure and format of the ES which will comprise three main parts: <ul style="list-style-type: none"> <li>▪ Volume 1: Text and Figures;</li> <li>▪ Volume 2: Technical Appendices;</li> <li>▪ Volume 3: Non-Technical Summary.</li> </ul>	Appendix 1.2 to this Report

## 2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

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### 2.1 NEED FOR THE PROPOSED DEVELOPMENT

- 2.1.1. The Proposed Development supports the provision of housing and other facilities. Southwater was identified as a location for strategic scale future growth in the Horsham District Council Core Strategy (2007) (**Ref. 2.1**). The Core Strategy has been replaced by the Horsham District Planning Framework (2015) (**Ref. 2.2**), for land outside the South Downs National Park.
- 2.1.2. The Site was allocated under Strategic Policy HA3 (Land West of Southwater) in the Horsham Local Plan (Regulation 19 version) (**Ref. 2.3**), for approximately 1,000 homes over the period to 2038. The Plan stated the Site will provide a range of homes, including family homes, affordable housing and housing for older people and key workers, a new school and employment and community facilities. The Plan also noted there is the opportunity to enhance open space, wildlife and provide biodiversity improvements.
- 2.1.3. The Regulation 19 Local Plan is under review following public consultation and examination undertaken by the Planning Inspectorate; based on the Government's announcement of changes to the National Planning Policy Framework (NPPF) (**Ref. 2.4**) and legal advice resulting from a position statement released by Natural England in September 2021. The position statement advised that development proposals in the Sussex North Water Supply Zone should not be allowed unless water neutrality could be demonstrated.
- 2.1.4. The Site also includes an area identified in the adopted Southwater Neighbourhood Plan (**Ref. 2.5**), Policy SNP2, for the provision of 422 to 450 new homes and 8ha of public open space, and an area identified in the Horsham District Council Core Strategy (**Ref. 2.1**), Policy SD10 for the provision of open space and community facilities to accommodate around 600 homes and associated infrastructure.
- 2.1.5. In the absence of the emerging Local Plan, the current local planning framework is the Horsham District Planning Framework 2015 (**Ref. 2.2**). The Regulation 19 (2024) is a material consideration and at this stage holds limited weight in the decision-making process. It is anticipated that the Proposed Development will be considered against the Planning Framework, with due consideration being attributed to the emerging Plan, dependent upon its stage of progression at the point the planning application is submitted.
- 2.1.6. Horsham District Council's 'Shaping Development in Horsham District' Planning Advice Note (SDPAN) (**Ref. 2.6**) also sets out design guidance and expectations for new developments and will be considered as part of the planning application.

### 2.2 LOCATION OF THE PROPOSED DEVELOPMENT

- 2.2.1. The Site is located adjacent to and west of the settlement of Southwater, within the administrative boundary of Horsham District Council. Please refer to **Figure 1 – Site Location Plan in Appendix 1.1**. The Site is bounded by the A24 to the north, Worthing Road to the east, Bonfire Hill to the south and Marlpot Road and Two-Mile Ash Road to the west.
- 2.2.2. The Site comprises primarily agricultural land, with hedgerows, scattered trees, areas of woodland and a number of streams and drains running in various directions throughout the Site.

- 2.2.3. A historic landfill is present on the northern boundary of the Site and this area is currently covered by woodland. Three areas of historic landfill are also located in the southern area of the Site, located within and adjacent to the disused railway line, which is now the Downs Link.
- 2.2.4. No statutory designated areas for nature conservation are located within or immediately adjacent to the Site. No internationally designated areas such as Special Protection Areas (SPAs) or Special Areas of Conservation (SACs) are located within 10km of the Site and no National Nature Reserves (NNRs) or Local Nature Reserves (LNRs) are located within 5km of the Site.
- 2.2.5. Four Sites of Special Scientific Interest (SSSIs) are located within 5km of the Site. The closest are Slinfold Stream and Quarry SSSI (approximately 3.9km to the northwest) and St Leonard's Park Ponds SSSI (4.2km to the northeast). The northern area of the Site lies within the 4-5km Impact Risk Zone (IRZ) for St Leonard's Park Ponds SSSI and St Leonard's Forest SSSI.
- 2.2.6. One non-statutory designated site, Courtland Wood Local Wildlife Site (LWS), is located within the Site boundary. (Note: Local Wildlife Sites are referred to as their former title of Sites of Nature Conservation Importance (SNCI) in the adopted Local Plan). Four further LWSs lie within 2km of the Site, the closest is Sparrow Copse LWS approximately 460m to the northwest.
- 2.2.7. Two areas of woodland included on Natural England's Ancient Woodland Inventory are located within the Site. These are Smith's Copse (one woodland unit), and Courtland Wood and Two Mile Ash Gill (two woodland units located adjacent to each other and shown as one area).
- 2.2.8. There are no protected landscape designations covering the Site or the surrounding area.
- 2.2.9. There are 24 listed buildings within 500m of the Site, one of which is Grade II\* (Great House Farmhouse) and 23 of which are Grade II. Great House Farmhouse is entirely enclosed by the Site on all sides although the listed building itself lies outside of the application boundary. Its associated barns lie within the application boundary. Two further Grade II\* listed buildings are located to the north-west at Christ's Hospital. Whilst located outside of the cultural heritage study radius, these buildings have been included as part of the baseline assessment as part of a comprehensive approach to appraising potential effects on the local historic built environment.
- 2.2.10. Eleven Grade II listed buildings are proximate to the western boundary of the Site, located on Two Mile Ash Road. A group of three Grade II listed buildings are located to the south of the Broadacres development and are located to east of the outlying section of the Site. College Farmhouse, Grade II, is located at the eastern edge of the Site, now experienced within the Broadacres development. One Grade II listed building is located on Worthing Road, to the east of the Site.
- 2.2.11. No Air Quality Management Areas (AQMA) are in close proximity to the Site. The nearest is Cowfold AQMA, approximately 6.5km to the southeast.
- 2.2.12. There are several Noise Important Areas surrounding the Site. The nearest is close to the northwest corner of the main site area, just south of the A24.
- 2.2.13. The Site lies entirely within Flood Zone 1, meaning that there is a probability of fluvial and tidal flooding of less than 0.1% every year.
- 2.2.14. The Site is classified as a Greenfield site, currently draining via natural overland runoff, land drains and infiltration. The destination for the northern catchment is the unnamed watercourse that bisects the catchment, and is a tributary of the River Arun, whereas the southern catchment drains to the Two Mile Ash Gill, a tributary of the River Adur.

- 2.2.15. The Site is not located within a Groundwater Source Protection Zone. However, the Groundwater Vulnerability is within the medium to low designation for the Site.
- 2.2.16. The Downs Link, a bridleway which follows the route of a disused railway line and is used by walkers, cyclists and horse riders, runs through the Site, in addition to several other Public Rights of Way are located within and surrounding the Site.

## 2.3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

- 2.3.1. The Applicant intends to submit an outline planning application for a residential-led development on the approximately 141ha site to provide the following:
- Up to 1000 homes (a mix of C2 and C3 use classes);
  - An employment area;
  - Community and leisure facilities, including retail ;
  - Provision for a nursery, primary and secondary school;
  - Gypsy and traveller pitches;
  - Landscaping, open space; and
  - New road improvements.
- 2.3.2. Approximately 4ha of the Site will be allocated for employment land.
- 2.3.3. A community hub will be provided offering appropriate uses, whilst retaining Lintot Square as the primary centre of Southwater.
- 2.3.4. Provision will be made for a nursery, primary and secondary school, including:
- One form of entry primary school, expandable to 2 forms of entry;
  - Up to 6 form entry secondary school, expandable to 8 forms of entry; and
  - One new full-day care nursery, to accommodate a minimum of 60 places in total.
- 2.3.5. The development proposals will be landscape-led, with the pattern of development enhancing identified landscape and heritage features:
- The tranquil character and the setting of the Downs Link will be preserved;
  - Public Rights of Way (PRoW) across the Site will connect their users with the landscape and retain some of their rural aspect;
  - Important key views within the Proposed Development towards the open countryside will be identified, including trees, heritage or other assets of special interest. The layout will also have regard and respond sensitively to key views into the Site; and
  - Character areas will be created through the Proposed Development based on the existing woodland and field character.
- 2.3.6. The proposals will provide a comprehensive Ecology and Green Infrastructure Strategy, incorporating a Biodiversity Net Gain (BNG) Plan, to demonstrate how a minimum of 10% net biodiversity gain will be achieved on the Site, in particular demonstrating that:

- The areas of Ancient Woodland (Courtland Wood and Smith's Copse) and any other woodland, are protected and their setting enhanced;
- Natural and semi-natural habitats, including woodland and ancient woodland, hedgerows and ponds, are retained and protected wherever possible;
- The creation of native rich hedges through the Proposed Development where possible; and
- The retention and creation of wildlife corridors, supporting the delivery of the Nature Recovery Network.

2.3.7. The Site is well located for access to the strategic and local highway network. New road improvements and improvements for pedestrians and cyclists are anticipated as part of the Proposed Development - subject to further assessment work and consultation with WSCC, including:

- A new link road between the Proposed Development and the Hop Oast roundabout;
- As identified within the draft Local Plan, the introduction of a fully signalised Hop Oast roundabout improvement to allow safe crossing of pedestrians and cyclists north to Horsham. Further improvements may also be undertaken to additional junctions on the A24 if required. This is subject to further assessment, consultation and agreement with WSCC;
- Up to four new vehicular accesses to the Site to spread traffic evenly across the development;
- Improvements between the Cedar Drive roundabout and the new school;
- Public Rights of Way within the Site will be retained and enhanced; and
- Improved links between the Proposed Development and Christ's Hospital station to help promote sustainable travel.

2.3.8. The proposals will aim to demonstrate a fabric first approach to the construction of the built development. Electric Vehicle Charging Points are anticipated for all individual residential dwellings. Residential communal car parks and commercial communal car parks will be served by the appropriate percentage in accordance with relevant policy. Secure and weatherproof cycle storage will also be provided. Opportunities should also be explored to improve sustainable connections for residents of nearby settlements, such as Tower Hill, ensuring better access for both Horsham and Southwater.

2.3.9. The design and layout of the Proposed Development will recognise and respect existing heritage assets particularly Great House Farmhouse and preserve those elements of the heritage assets and their settings that are significant in illustrating their historic and architectural interest.

2.3.10. There may be demolition of some existing farm buildings on the Site; this is to be confirmed and will be assessed as appropriate in the EIA.

## 2.4 EMBEDDED ENVIRONMENTAL DESIGN MEASURES

2.4.1. Embedded mitigation relates to measures inherent in the design of the Proposed Development. Throughout the iterative design process, environmental constraints will be one of the key factors which shape the design of the Proposed Development. As baseline information is collected and potential impacts identified, these will be factored into design workshops in parallel with other

engineering and technical constraints. Therefore, mitigation in the form of design to avoid or reduce environmental impacts will be inherent from the outset.

2.4.2. **Table 2-1** presents the embedded environmental design measures for the Proposed Development.

**Table 2-1 - Embedded environmental design measures**

Environmental Factor	Embedded environmental design measure and associated benefit
Biodiversity	<p>The Proposed Development will aim to protect and enhance biodiversity in order to achieve a 10% net biodiversity gain.</p> <p>Woodland, including the areas of Ancient Woodland (Courtland Wood and Smith’s Copse) will be protected and their setting enhanced. Natural and semi-natural habitats, including hedgerows, trees and ponds, will be retained and protected wherever possible.</p> <p>Native species rich hedgerows will be proposed through the development, and wildlife corridors will be retained and created.</p>
Cultural Heritage	<p>The design and layout of the Proposed Development will recognise and respect existing heritage assets, particularly Great House Farmhouse, and preserve those elements of the heritage assets and their settings that are significant in illustrating their historic and architectural interest.</p> <p>The masterplan for the Proposed Development will be heritage and landscape-led and as such will retain and respect historic landscape features, such as the medieval manorial boundary and historic hedgerows, where possible, which will be incorporated sensitively into the scheme. A heritage trail and interpretation signage will also be considered to improve the legibility and public access to the archaeological and historical context of the Site.</p>
Landscape and Visual	<p>The development proposals will be landscape-led, with the pattern of development enhancing identified landscape and heritage features.</p> <p>The landscape design will aim to preserve the character and setting of the Downs Link.</p> <p>Public rights of way across the Site will connect their users with the landscape and retain some of their rural aspect. Key views into the Site and from the Proposed Development towards the open countryside will be considered in the landscape design.</p> <p>Character areas will be created through the Proposed Development based on the existing woodland and field character.</p>

Environmental Factor	Embedded environmental design measure and associated benefit
Arboriculture	Arboriculture is being considered as an integral part of the design to avoid tree loss and mitigation will be proposed to retain and protect notable/veteran/protected trees. New tree, scrub and hedgerow planting is proposed as part of the design and existing Site boundary planting will be supplemented with additional planting as appropriate.
Daylight, Sunlight and Overshadowing	The Proposed Development will aim to minimise the impact of daylight, sunlight and overshadowing to the surrounding properties and open spaces. The proposed buildings' massing, height, and distance to the sensitive receptors (such as residential buildings or outdoor amenity areas) will be considered to ensure that the impact of the Proposed Development is kept as low as possible.
Noise and Vibration	Best practicable means (BPM) mitigation measures will be adopted to minimise noise and vibration levels from on-site works as far as reasonably possible.
Socio-economics	<p>Provision will be made for a nursery, primary and secondary school.</p> <p>A community hub will be provided, including leisure and community facilities.</p> <p>Informal open space provision will include (but not be limited to) a 5km safe circular route for pedestrians and cyclists, and a trim trail.</p>
Transport	<p>Subject to ongoing traffic modelling it is expected that the Hop Oast roundabout will be fully signalised to allow safe crossing of pedestrians and cyclists north to Horsham. Further improvements may also be undertaken to additional junctions on the A24 if required. This is subject to further assessment, consultation and agreement with WSCC</p> <p>It is anticipated that there will be four new vehicular accesses to the Site in order to spread traffic evenly across the development.</p> <p>Improvements will be proposed between the Cedar Drive roundabout and the new school, along with improved links between the Site and Christ's Hospital station to help promote sustainable travel.</p>

Environmental Factor	Embedded environmental design measure and associated benefit
Water Resources, Flood Risk and Drainage	<p>All new homes will be designed to achieve efficient usage of water.</p> <p>Rainwater harvesting will be considered for commercial uses.</p> <p>A robust Sustainable Urban Drainage Systems (SuDS) strategy is being developed to manage surface water effectively across the site. This will include a combination of well-designed basins, rain gardens, swales, and other landscape-led features, ensuring both technical performance and integration with the character of the masterplan.</p>
Climate Change and Greenhouse Gas (GHG) Emissions	<p>The proposals will aim to demonstrate a fabric first approach to the construction of the built development.</p> <p>Electric Vehicle Charging Points are anticipated for all individual dwellings and secure and weatherproof cycle storage will be considered where appropriate.</p>
Artificial Lighting	<p>Lighting will be considered as an integral part of the design. The lighting design will be developed in accordance with current best practice guidance, taking into account the surrounding sensitivities, including existing neighbouring residential properties and ecological receptors, and will be based on the use of low light pollution installations.</p> <p>The detailed lighting proposals will be developed and tested at the Reserved Matters Application (RMA) stage, where specific design solutions for residential amenity, ecological sensitivities, and the use of low light pollution installations can be set out.</p>
Waste	<p>Compliance with the regulatory and legislative regimes as required by law that apply irrespective of the EIA process and construction adopting best practice techniques.</p> <p>The impact of the Proposed Development on key resources will be considered throughout the design development, including materials, and working collaboratively with the supply chain to minimise / optimise the consumption of materials, minimise the generation of waste, and procure sustainable materials.</p> <p>Internal and external recycling waste storage facilities will be provided to all new homes, to enable the segregation of recycling from general waste.</p>

## 3 APPROACH TO EIA

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### 3.1 INTRODUCTION

- 3.1.1. This chapter sets out the overall approach that will be taken to the EIA for the Proposed Development.
- 3.1.2. The Scoping Report will contain the information specified in Schedule 4 of the EIA Regulations (**Ref. 1.1**). The approach to the assessment has been informed by current best practice guidance.
- 3.1.3. A detailed overview of the guidance and methodology adopted for each environmental factor is provided within the respective environmental factor chapters of this report.
- 3.1.4. The environmental factors listed within Article 3(1) of EU Directive 2014/52/EU are listed below.
- Population and Human Health;
  - Biodiversity;
  - Land;
  - Soil;
  - Water;
  - Air;
  - Climate;
  - Material Assets;
  - Cultural Heritage; and
  - Landscape.

### 3.2 CONSULTATION

- 3.2.1. Under the terms of Regulation 15(4) of the EIA Regulations (**Ref. 1.1**), the Applicant is required to consult with at least the key statutory consultation bodies identified in Regulation 2(1) of the EIA Regulations, before issuing their formal EIA Scoping Opinion to agree the key issues and proposed methodologies to be included in the ES.
- 3.2.2. As part of the EIA process, consultation will be undertaken with a range of statutory and non-statutory consultees. This EIA Scoping Request will provide the basis for consultation on the nature of the Proposed Development, its potential environmental effects, and the scope and methodology proposed for the EIA.
- 3.2.3. It is anticipated at this stage that consultees will include:
- Horsham District Council:
    - Landscape Officer;
    - Conservation and Archaeology Officer;
    - Biodiversity Officer;
    - Environmental Protection (noise, air quality and land contamination);
    - Planning Policy;

- Transport Planning; and
- Waste Management.
- West Sussex County Council;
- Southwater Parish Council;
- Natural England;
- The Environment Agency;
- Historic England;
- Southern Water;
- Southwater Cricket Club; and
- Horsham District Scouts

3.2.4. The Public Participation Directive 2003/35/EC, as part of the EIA Regulations, provides opportunities for the public to be involved in the consenting process for certain activities, through access to information, justice and consultation on key documents.

3.2.5. Consultation has been undertaken or is proposed across a range of environmental topics. Engagement to date includes discussions with Horsham District Council (HDC), West Sussex County Council (WSCC), , and other statutory bodies regarding Air Quality, Noise, Ground Conditions, Ecology, and Transport. Methodologies used for the previous iteration of the design for assessments such as Landscape, Transport, Ground Conditions, Air Quality, Noise have been shared and agreed in principle. No consultation has yet occurred for Socio-economics, Climate Change, GHG, Water or Cumulative Effects, though future engagement with HDC is planned to confirm scope and committed developments. The approach aligns with national and local planning policy, including the NPPF and Horsham District Planning Framework.

### **3.3 DEFINING THE STUDY AREA**

3.3.1. Study areas will be defined for each individual environmental factor, and these are set out in the respective environmental factor chapters of this report.

### **3.4 ESTABLISHING BASELINE CONDITIONS**

3.4.1. Environmental effects as a result of the project will be described in the ES in relation to the extent of changes to the existing baseline environment as a result of the construction and/or operation of the Proposed Development. The baseline environment will comprise the existing environmental characteristics and conditions, based upon desk-top studies and field surveys undertaken and information available at the time of the assessment.

3.4.2. The baseline scenario would be 2025, however, any variation to this will be outlined in the individual technical chapters as required in accordance with relevant standards and assessment guidelines. Effects arising at the time of construction will largely be temporary in nature, however other effects may result in lasting changes, such as those in relation to positive effects from remediation of any contamination.

3.4.3. Any other factor specific approaches to establishing baseline conditions is provided within the respective environmental factor chapters of this report, as required.

### 3.5 ESTABLISHING FUTURE BASELINE CONDITIONS

- 3.5.1. The 'future baseline' is the description of the likely evolution of the baseline scenario without the implementation of the Proposed Development, as far as natural changes from the baseline scenario can be assessed with reasonable effort and on the basis of available environmental information and scientific knowledge. The ES will take account of readily available information, such as the Local Development Framework and climate change scenario data, to provide a description of the natural changes in the local environment over an appropriate timescale that the datasets support.
- 3.5.2. The description of the future baseline conditions will be presented in the Project Description chapter of the ES.

### 3.6 APPROACH TO MITIGATION

- 3.6.1. The identification of mitigation measures follows the principles of avoidance where possible, reduction where avoidance cannot be achieved, or compensation where reduction cannot be achieved or would not achieve practicable levels of mitigation.
- 3.6.2. Mitigation measures will be identified throughout the design process of the Proposed Development and through consultation with key stakeholders. The identification of potentially significant adverse effects will be considered within the design process and incorporated into the design where appropriate.
- 3.6.3. In line with guidance published by ISEP (**Ref. 3.1**), three types of mitigation will be identified and used throughout the EIA:
- Primary Mitigation: examples include modifications to the location or design of the Proposed Development made during the design process that are an inherent part of the Proposed Development;
  - Secondary Mitigation: actions that will require further activity to achieve the anticipated outcome e.g. preparation of travel plan or archaeological watching brief; and
  - Tertiary Mitigation: actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements or standard practices used to manage commonly occurring environmental effects (i.e. construction related nuisances), as such a Construction Environmental Management Plan (CEMP) will be prepared to support the Application.
- 3.6.4. Primary mitigation measures will be presented as part of the description of the Proposed Development which will be set out within the introductory chapters of the ES. Secondary and tertiary mitigation measures will be documented in each technical chapter. Each factor assessment will assess the Proposed Development taking account of primary mitigation measures.

### 3.7 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS

- 3.7.1. The EIA will be undertaken in the context of and considering the above details, and also relevant planning policy at national (NPPF) (**Ref. 2.4**), strategic and local levels. Legislation, policy or guidance which relates to a specific technical discipline will be considered as appropriate within the ES and discussed within the relevant technical chapters.
- 3.7.2. The assessment will consider effects at the Site preparation, construction and operational stage, the definitions of which are set out below:

- Site Preparation and Construction: Site preparation includes work required to prepare the Site for construction including demolition (if required), earthworks, remediation (if required) and any archaeological excavation (if required). The construction stage includes all works associated with the construction stage; and
  - Operation - this relates to effects once the development is constructed and in use or occupied.
- 3.7.3. The assessments of the likely significant effects for each environmental factor will take into account both the construction and operational stages of the Proposed Development as a whole, however, given the nature of the Proposed Development, the assessments will not consider specific build out stages of each stage.
- 3.7.4. It is currently anticipated that construction will start in late 2026, however, this and the construction programme are subject to the timescales for the Regulation 19 Local Plan. At this stage several design details are still emerging. These details will be included within the ES, which would be referenced consistently throughout each of the technical chapters.
- 3.7.5. A number of criteria will be used to determine whether or not the potential effects of the Proposed Development are 'significant'. The effects will be assessed quantitatively wherever possible. The significance rating will take account of the following criteria:
- Likelihood of occurrence;
  - Geographical extent;
  - Adherence of the proposals to legislation and planning policy;
  - Adherence of the proposals to international, national and local standards;
  - Sensitivity/value of the receiving environment or affected receptors;
  - Whether the effect is temporary or permanent;
  - Whether the effect is short, medium or long term in duration;
  - Whether the effect is reversible or irreversible;
  - Inter-relationship between effects; and
  - The consultation responses.
- 3.7.6. Residual effects, following the implementation of mitigation measures will be identified in the ES. The classification of effects reflects judgements as to the importance or sensitivity of the affected receptor(s) and the nature and magnitude of the predicted changes. For example, a large negative impact on a feature or site of low importance/sensitivity will comprise a lower classification of effect than the same impact of a feature or site of high importance/sensitivity.
- 3.7.7. The following terms to classify the significance of effects will be used in the ES, unless otherwise stated within individual ES chapters:
- **Major positive or negative effect** - where the Proposed Development would cause a large improvement (or deterioration) to the existing environment;
  - **Moderate positive or negative effect** - where the Proposed Development would cause a noticeable improvement (or deterioration) to the existing environment;

- **Minor positive or negative effect** - where the Proposed Development would cause a small improvement (or deterioration) to the existing environment; and
- **Negligible** - no discernible improvement or deterioration to the existing environment as a result of the development.

3.7.8. Effects which are deemed to be significant for the purpose of this assessment are those which are described as being moderate or major positive or negative. The determination of significance will be detailed within each technical chapter of the ES, as appropriate.

3.7.9. Summary tables that outline the potential effects associated with an environmental discipline (e.g. local air quality), potential mitigation measures and residual effects will be provided in the ES. A distinction will be made between direct and indirect; short and long-term; permanent and temporary; primary and secondary; cumulative; positive and negative. The matrix provided in **Table 3-1** below will be used during the EIA to determine the significance of any given effect.

**Table 3-1 - Matrix for classifying effects**

		Sensitivity of receptor / receiving environment			
		High	Medium	Low	Negligible
Magnitude of change	High	Major	Major	Moderate	Negligible
	Medium	Major	Moderate	Minor to Moderate	Negligible
	Low	Moderate	Minor to Moderate	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

3.7.10. Best practice and guidance require certain technical disciplines to follow factor-specific criteria for determining significance. This includes Local Air Quality, Noise and Vibration, Townscape, Heritage and Visual Effects, Archaeology, and Biodiversity. Where this is the case, the criteria to be used will be presented clearly in the methodology section of the technical chapters within the ES. **Appendix 1.2** confirms the proposed structure and format of the ES.

### 3.8 OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

3.8.1. Enhancement measures aim to deliver environmental improvements, such as the restoration or enhancement of existing habitats. These measures go beyond mitigation and are not considered when assessing the significance of environmental effects. However, they play a valuable role in maximising the positive outcomes of the Proposed Development. Opportunities for enhancement will be identified and detailed within the individual environmental factor chapters, ensuring that the benefits are clearly articulated and optimised wherever possible.

### 3.9 COORDINATION OF ASSESSMENTS

- 3.9.1. Any additional assessments required which may have a relationship with the environmental assessments will be identified within the ES where relevant and submitted with the planning application.

### 3.10 CLIMATE CHANGE RESILIENCE

- 3.10.1. The UK's climate is changing. Since the 1980s the UK climate has been warming at a rate of approximately 0.25°C per decade, and the last 3 years have been in the UK's top five warmest on record. The UK's climate has also become steadily wetter since the 1980s with the most recent decade (2015–2024) 2% wetter than 1991–2020 and 10% wetter than 1961–1990. Weather extremes are becoming more frequent, with the all-time highest maximum temperature recorded in the last decade, October 2023 to March 2024 recording over 150% of the 1991–2020 average rainfall, resulting in widespread flooding. Other climate change trends such as drought, wind, sea level rise and flood risk, snow and humidity are predicted to change (**Ref. 3.2**).
- 3.10.2. The EIA will evaluate the climate change resilience in terms of how the Proposed Development may be vulnerable to a changing climate across the project design life (Climate Change Risk and Resilience), and how climate change interacts with the conclusions of environmental effects (the In-Combination Climate Impacts (ICCI) Assessment).

#### VULNERABILITY OF THE PROPOSED DEVELOPMENT TO CLIMATE CHANGE

- 3.10.3. A Climate Risk and Resilience Report (CRRR) has been prepared within **Appendix 1.3**. The CRRR reports on the current and future baseline and summarises climate trends and hazards applicable to the Proposed Development. A vulnerability assessment has been undertaken to determine the sensitivity and exposure of the components of the Proposed Development to climate change hazards. This takes into account embedded design control measures at this stage.
- 3.10.4. A number of moderate, high and very high vulnerabilities have been identified through the vulnerability assessment and climate design measures will be developed during the ES stage to reduce the impacts of these vulnerabilities to a tolerable threshold.

#### FUTURE CLIMATE AND THE OUTCOME OF THE EIA

- 3.10.5. Climate Change Resilience interfaces with all other topic chapters through the In-combination Climate Impacts (ICCI) assessment. The ICCI is undertaken by assessing how identified receptors in the surrounding environment are affected by future climate parameters, informed by the future climate baseline. Inclusion of an ICCI assessment has been scoped in, but this will be addressed at ES stage and captured within the relevant chapters as part of the assessments for their environmental topics. The ICCI assessment is a qualitative assessment and will identify if any reported effects will be exacerbated or ameliorated by the effects of climate change and identify further mitigation where required. It will also assess whether the embedded measures will continue to be effective considering changes to climate.

## 4 ENVIRONMENTAL FACTORS SCOPED OUT

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- 4.1.1. As part of the EIA process and based on the information available to date, there are a number of environmental factors, as listed within Article 3(1) of EU Directive 2014/52/EU, for which it is considered an assessment as part of the EIA is not justified, and therefore will not be considered in the ES.

### 4.2 DAYLIGHT, SUNLIGHT AND OVERSHADOWING

- 4.2.1. Site sensitivities include sensitive receptors within and in close proximity to the Site.
- 4.2.2. The Proposed Development will mainly comprise two-storey houses which will result in a building massing that is equivalent to the existing nearby properties in Southwater. In addition, the most sensitive receptors to daylight and sunlight impacts i.e. the existing properties adjacent to the Site, are located at a distance from the Proposed Development such that it is unlikely that this would represent a significant impact on the daylight and sunlight to surrounding windows, rooms and outdoor amenity areas. Therefore, it is considered that no further assessment of daylight, sunlight and overshadowing is required in the EIA.

### 4.3 HUMAN HEALTH

- 4.3.1. Site sensitivities include sensitive receptors within and in close proximity to the Site.
- 4.3.2. Due to the nature of the Proposed Development, it is anticipated that Human health can be scoped out of this EIA as the Proposed Development is unlikely to have any significant effects on the health of existing and future residents or workers.
- 4.3.3. Temporarily, construction of the Proposed Development may cause the emissions of dust and noise, however these emissions will be controlled and managed through the implementation of a Construction Environmental Management Plan (CEMP), and any other identified mitigation measures in these topic assessments, so as to avoid adverse health impacts. These could include measures relating to the management of construction access and traffic to ensure disruption to journeys, and access to local facilities, is reduced as much as possible.
- 4.3.4. There is the potential for beneficial effects to human health to arise through the provision of new homes, including for those requiring extra care / assisted living and affordable homes. The Proposed Development also includes employment land which could offer a range of employment opportunities for the existing or new population. Benefits to health through opportunities for physical activity will be supported through the provision of leisure facilities and through the promotion of sustainable travel, and social cohesion in the new community will be supported through the provision of a community hub where a range of facilities and services will be located. Children and young people will also benefit through the provision of a new nursery and schools.
- 4.3.5. It is therefore considered that no further assessment is required in the EIA.

### 4.4 ARBORICULTURE

- 4.4.1. Site sensitivities include Ancient / notable / protected trees.
- 4.4.2. Arboriculture is being considered as an integral part of the design to avoid tree loss and mitigation will be proposed to retain and protect ancient, notable and protected trees. New tree and hedgerow planting is proposed as part of the design and existing Site boundary planting will be supplemented

with additional planting as appropriate. Measures will also be included in the CEMP to protect existing trees and their root zones during construction.

- 4.4.3. An arboricultural survey has been undertaken in accordance with BS5837 and a separate Tree Survey Report and Arboricultural Impact Assessment will be prepared as part of the planning application covering arboricultural impacts and mitigation, as such it is considered that no further assessment is required in the EIA.

## 4.5 WASTE

- 4.5.1. Waste generated during the construction and operation of the Proposed Development will be managed in accordance with legal requirements and is not anticipated to result in any likely significant environmental effects since the waste is expected to be typical of that associated with residential-led developments.
- 4.5.2. In addition, during the construction phase the preference will be to re-use material on site, where possible, so that no significant volumes of excavated material need to be removed from the Site for off-site disposal.
- 4.5.3. Waste has therefore been scoped out of the EIA; however, its importance is still recognised and it is proposed that a stand-alone Outline Waste Management Strategy covering construction and operational waste will be developed and submitted in support of the planning application.
- 4.5.4. It will contain the following information:
- Summary of applicable national, regional and local waste policies and guidance;
  - Outline of the proposed management arrangements for waste arising from site preparation and earthworks and refer to potential scenarios where waste would have to be exported from the Site;
  - The provisions that will be made for waste prevention and minimisation, as well as the on-site storage and collection of waste during the construction phase;
  - The estimated tonnage of construction waste that is likely to arise, set out by material type (e.g. wood, brick/concrete, soils, plastics etc);
  - Calculation of estimated residential waste arising using Defra and local authority waste data;
  - Calculation of estimated commercial waste arising using appropriate benchmarks; and
  - Outline of the proposals for the storage and collection of refuse, recycling, and garden waste from the Proposed Development once occupied / operational
- 4.5.5. As such, it is therefore considered that no further assessment of waste and materials is required in the EIA.

## 4.6 RISK OF MAJOR ACCIDENTS AND/OR DISASTERS

- 4.6.1. Due to the nature of the Proposed Development, it is unlikely that major accidents and/or disasters could occur. Measures will be included in the CEMP to limit the risk of major accidents and/or disasters during construction.
- 4.6.2. All electrical installations will meet the required specifications and buildings will be designed to the required wind loading/severe weather protection and fire safety standards.

- 4.6.3. The Flood Risk Assessment will consider 100-year flooding events and consider sensitivities for changes in rainfall due to climate change. The outcomes of that would dictate if design changes were necessary such as additional drainage measures.
- 4.6.4. All required processes will be followed in relation to the design and construction of the Proposed Development, as such, it is considered that no further assessment is required in the EIA.

## **4.7 ARTIFICIAL LIGHTING**

- 4.7.1. Site sensitivities include sensitive receptors within and in close proximity to the Site.
- 4.7.2. Lighting is being considered as an integral part of the design. The lighting design will be developed in accordance with current best practice guidance, taking into account the surrounding sensitivities, including existing neighbouring residential properties and ecological receptors, and will be based on the use of low light pollution installations. As such, it is considered that no further assessment is required in the EIA.

## **4.8 HEAT AND RADIATION**

- 4.8.1. Given the nature of the Proposed Development, an assessment of heat and radiation is not deemed to be relevant to the scope of the EIA.

## **4.9 ARCHAEOLOGY**

- 4.9.1. It is suggested that Archaeology could be scoped out for the EIA as archaeological interest can be managed via standard planning control and secured and mitigated by standard planning conditions on any future grant of planning consent.

## 5 AIR QUALITY

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### 5.1 CONSULTATION

5.1.1. See Section 3.2 of Chapter 3 for information on consultation.

### 5.2 STUDY AREA

5.2.1. For information on the Site, refer to Section 2.

#### CONSTRUCTION PHASE

5.2.2. For the assessment of the effects of dust and particulate matter (PM<sub>10</sub>) generated during on-site construction works, the study area will extend to 250m from the site boundary for human receptors and 50m for ecological receptors as required by guidance published by the Institute of Air Quality Management (IAQM) (**Ref 5.1**). It is within this distance that the impacts of dust soiling and increased particulate matter in the ambient air, and indeed emissions from vehicles and plant used on site, will have the greatest impact on local air quality at sensitive receptors.

5.2.3. With regard to the trackout of mud from the Site onto the local road network, the IAQM guidance (**Ref 5.1**) says that this should be assessed where there are human and ecological receptors within 50m of the route used by vehicles on the public highway, up to 250m from the site entrance.

#### OPERATIONAL PHASE

5.2.4. Guidance produced by Environmental Protection UK (EPUK) and the IAQM for the assessment of air quality for planning applications (**Ref 5.2**) advises that impacts on air quality could be significant, requiring quantitative assessment, if traffic flow changes resulting from the Proposed Development exceed the screening criteria. Accordingly, the study area will be defined based on the volume and distribution of vehicle trips generated by the Proposed Development, compared against the EPUK/IAQM criteria outlined in **Appendix 5.1**.

### 5.3 BASELINE CONDITIONS

5.3.1. The Site is in an area where air quality is mainly influenced by emissions from road traffic using the A24, Worthing Road and Two Mile Ash Road. There are no industrial pollution sources that are likely to noticeably influence local air quality at the Site.

5.3.2. Horsham Wastewater Treatment Works (WWTW) is located approximately 130m northwest of the Christ's Hospital car park site and 1.2km northwest of the main Site. The prevailing wind is from the south-west (see **Figure 5-1** in **Appendix 5.3**). Therefore, given that the Site is upwind of the WWTW and aforementioned distances to the WWTW, odour from the WWTW is unlikely to be a nuisance or lead to a loss of amenity. However, this matter will require further investigation through consultation with Thames Water and the EHO at HDC.

5.3.3. Within the HDC administrative area, two AQMA's have been declared by HDC's administrative area due exceedances of the Air Quality Strategy (AQS) objective for annual mean nitrogen dioxide (NO<sub>2</sub>) caused by road traffic emissions. The Cowfold AQMA and Storrington AQMA are located approximately 6.8km southwest and 13.5km southeast of the Site, respectively.

5.3.4. HDC's latest Annual Status Report (ASR) (2024) (**Ref 5.3**) provides the results of air quality monitoring undertaken by HDC across their network of automatic monitoring stations and NO<sub>2</sub>

diffusion tubes. The ASR indicates that there are four NO<sub>2</sub> diffusion tube monitoring stations located within a 2km radius of the Site, which is sufficient to characterise the air quality both within the Site and in the immediate vicinity. Annual mean NO<sub>2</sub> concentrations recorded at these monitoring sites from 2019-2023 inclusive are shown in **Appendix 5.2**.

- 5.3.5. There has been a steady downwards trend in annual mean NO<sub>2</sub> concentrations at the above monitoring sites between 2019 and 2023. The reductions during 2020 and 2021 that can be attributed to the COVID-19 pandemic have been maintained and concentrations have reduced further in both 2022 and 2023. This can mostly be attributed to vehicle fleet renewal which has led to reduced tailpipe NO<sub>2</sub> emissions. The AQS objective for annual mean NO<sub>2</sub> concentrations has been met at all three monitoring locations and in all years, with concentrations well below 75% of the relevant objective. The AQS objective for 1-hour mean NO<sub>2</sub> concentration is, therefore, has been met.
- 5.3.6. There are no PM<sub>10</sub> and PM<sub>2.5</sub> monitoring stations within a 2km radius of the Site. The nearest PM<sub>10</sub> monitoring station is Horsham Park Way, located approximately 2.3km northeast of the Site. Annual mean PM<sub>10</sub> concentrations recorded at this monitoring station between 2019 to 2023 are shown in **Appendix 5.2**. Concentrations of PM<sub>10</sub> meet the AQS objective of 40µg/m<sup>3</sup>. The local monitoring data also shows that the 24-hour mean PM<sub>10</sub> objective has been met. Unlike NO<sub>2</sub>, 2023 and 2024 concentrations have increased since 2020/2021 and are similar to 2019 concentrations. During 2023, there was a small increase in concentrations from both 2022 and 2019. The lack of a consistent downward trend in PM<sub>10</sub> concentrations could be attributed to several contributing factors. Firstly, the increased use of solid fuel appliances in residential settings has likely offset gains made elsewhere. Secondly, while fleet renewal has led to cleaner tailpipe emissions and reductions in NO<sub>2</sub>, it has not delivered comparable reductions in particulate matter due to non-exhaust sources such as brake and tyre wear, especially with the increase in electric vehicle ownership. Lastly, existing local and regional sources of particulate emissions may not have significantly reduced their output, further contributing to the stagnation in PM<sub>10</sub> concentrations.
- 5.3.7. PM<sub>2.5</sub> concentrations for Horsham Park Way (see **Table 3 in Appendix 5.2**) was derived based on the PM<sub>10</sub> monitoring data using the national conversion factors. The estimated PM<sub>2.5</sub> concentrations meet the AQS objective of 20 µg/m<sup>3</sup>. At this location, PM<sub>2.5</sub> annual mean concentration currently predicted to be exceeding both the interim target concentration of 12 µg/m<sup>3</sup> (deadline January 2028), and the stricter target of 10 µg/m<sup>3</sup> to be achieved by 2040. However, given the concentrations are estimated, it is not possible to determine if the national conversion factors produce data that is representative of this location and the area in the immediate vicinity.

## 5.4 PROPOSED ASSESSMENT METHODOLOGY

### CONSTRUCTION PHASE

- 5.4.1. The assessment of construction phase effects will be undertaken following the methodology outlined within the IAQM's construction guidance (**Ref 5.1**), applying professional judgement where required. The significance of effects will be assessed with reference to the risk levels set out within the guidance. Effects on air quality due to on-site construction activities will be temporary and are unlikely to be significant following the implementation of best practice mitigation measures.
- 5.4.2. Emissions to air (NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>) from construction traffic will be assessed qualitatively. However, if the construction phase is likely to extend beyond two years, the number of construction

vehicle movements likely to be generated will be screened against the criteria in EPUK/IAQM guidance (**Ref 5.2**) to establish if detailed assessment is required.

- 5.4.3. There is one Local Wildlife Site (LWS), Courtland Wood LWS, and three Ancient Woodlands (AW), within the Site boundary, therefore effects on ecological receptors due to on-site construction activities should be considered.

### **OPERATIONAL PHASE**

- 5.4.4. The number of vehicle movements generated by the Proposed Development once operational will be screened against the criteria in EPUK/IAQM planning guidance (**Ref 5.2**) to establish if a detailed air quality assessment is required.
- 5.4.5. The quantitative air quality assessment will be undertaken using dispersion modelling, with reference to guidance published by the EPUK/IAQM (**Ref 5.2**) and the Department for Environment, Food and Rural Affairs (Defra) technical guidance (**Ref 5.4**). The predicted pollutant concentrations with and without the Proposed Development will be compared to the relevant AQS objectives and impact of air quality will be evaluated. The appropriate mitigation measures will be recommended to reduce or remove any potentially adverse air quality impacts identified.
- 5.4.6. The scope and methodology for the air quality assessment will be discussed and agreed with HDC's EHO.
- 5.4.7. An emission mitigation assessment will also be undertaken following the methodology provided in the Air Quality and Emissions Mitigation Guidance for Sussex (2021) (**Ref 5.5**).

## **5.5 DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS**

### **CONSTRUCTION PHASE**

- 5.5.1. During the construction phase, dust and PM<sub>10</sub> are likely to be generated from activities including demolition, earthworks, construction and track-out, which may result in localised and temporary adverse impacts on local receptors such as:

- the existing residential properties in A24 Pollards Way, Worthing Road, and Church Lane;
- Christ's Hospital School;
- Castlewood Primary School;
- industrial/commercial units along Worthing Road; and
- the Courtland Wood LWS and three AWs within the Site boundary.

- 5.5.2. Emissions associated with non-road mobile machinery on site and construction vehicles using the local transport network could also result in potential air quality impacts.

### **OPERATIONAL PHASE**

- 5.5.3. Once operational, emissions from traffic generated by the Proposed Development could impact local air quality along the routes that will be used by traffic travelling to and from the Site, such as along Worthing Road and the A24. The overall effect will need to be determined using traffic data and, if required, detailed dispersion modelling will be undertaken during the next stage of the assessment.
- 5.5.4. A preliminary review indicates that that the nearest existing sensitive receptors to the Site include Christ's Hospital School to the west and north-west, Castlewood Primary School to the east, and

properties located along Worthing Road and the A24 will be sensitive to changes in air quality due to traffic associated with the operation of the Proposed Development.

- 5.5.5. Consideration will also be given to sensitive receptors within the identified committed developments/cumulative schemes, which will introduce new sensitive receptors/exposure into the study area, as well as locations within the Proposed Development itself.
- 5.5.6. There are no European designated ecological sites (as defined within the Conservation of Habitats and Species Regulations 2017 (as amended) (**Ref 7.18**) within 10km radius of the site. The nearest nationally designated ecological site, Slinfold Stream and Quarry Site of Special Scientific Interest (SSSI), which is located 3.9km from the Site. Given the distance and distribution of development traffic, significant effects upon on the designated ecological site are not anticipated. However, there are seventy-nine Ancient Woodlands (AW) and four Local Wildlife Sites (LWS) within 2km of the Site. These ecological receptors, located along Worthing Road and the A24, will be sensitive to changes in air quality due to traffic associated with the operation of the Proposed Development. The details of ecological receptors are listed in **Chapter 7, Ecology**.

**SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT**

- 5.5.7. The elements scoped in or out of further assessment for air quality in the next EIA stage are summarised in **Table 5-1**.

**Table 5-1 - Elements Scoped in or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
Effect of Dust and PM <sub>10</sub> generated by onsite activities	Construction	✓		Potential for direct effects on nearby residential dwellings and ecological site located within 250m of the site boundary.
Increases in ambient pollutant concentrations due to emissions from site plant	Construction	✓		There is a residential property in close proximity to the eastern Site boundary.
Increases in ambient pollutant concentrations due to emissions from vehicles accessing and leaving the Site during the works	Construction	✓		Potential for direct effects on air quality at residential dwellings located adjacent to those roads that will experience a significance change in traffic flows due to the Proposed Development.

Element	Phase	Scoped In	Scoped Out	Justification
Changes in air quality due to traffic associated with the operation of the Proposed Development	Operation	✓		Potential for direct effects on air quality at residential dwellings located adjacent to those roads that will experience a significance change in traffic flows due to the Proposed Development.
Exposure of future occupants of the Proposed Development to poor air quality	Operation	✓		Will be considered given that the Site is bounded by the A24 to the north.
Local, national and international designated sites	Construction and Operation	✓		<p>Potential for direct effects on LWS and AW located within the site boundary.</p> <p>Potential for direct effects on air quality at ecological receptors located adjacent to those roads that will experience a significance change in traffic flows due to the Proposed Development.</p>

## 5.6 MITIGATION

### CONSTRUCTION PHASE

- 5.6.1. Mitigation measures that should be implemented on-site during the construction phase of the Proposed Development will be based on industry best practice techniques to suppress the generation of dust and particulate matter at source, as set out in the IAQM's construction guidance (Ref 5.1).
- 5.6.2. To reduce the effect of emissions to air from vehicles accessing and leaving the Site during the construction of the Proposed Development, mitigation measures such as ensuring that these vehicles do not pass along sensitive roads (residential roads, congested roads, via unsuitable junctions, etc.) where possible, and that vehicles are kept clean (through the use of wheel washers, etc.) and sheeted when on public highways, will need to be implemented. Timing of large-scale vehicle movements to avoid peak hours on the local road network will also be beneficial.

### OPERATIONAL PHASE

- 5.6.3. For the operational phase of the Proposed Development, consideration should be given to:
- The mitigation measures outlined within the Sussex Air Quality and Emissions Mitigation Planning Guidance (Ref 5.5); and
  - West Sussex County Council (WSCC's) new Parking Standards (Ref 5.6) which include, for the first time, a target for the provision of active and passive electric vehicle charging points.

- 5.6.4. In addition to the above, a Travel Plan will be produced for the Proposed Development, which will provide details of alternative transport to single occupancy vehicles, including measures to promote walking and cycling.

## **5.7 OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT**

- 5.7.1. The Proposed Development will provide opportunities for enhancing the environment with respect to local air quality via sustainable transport planning, landscaping and green space.

## **5.8 LIMITATIONS AND ASSUMPTIONS**

- 5.8.1. The air quality assessment undertaken as part of the EIA will be limited by the availability and accuracy data of the input data required. This data includes, but is not limited to, the traffic data provided for the dispersion modelling of road traffic emissions, and information regarding the activities that will be undertaken on-site during the construction of the Proposed Development.

## 6 CULTURAL HERITAGE

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### 6.1 CONSULTATION

6.1.1. See Section 3.2 of Chapter 3 for information on consultation undertaken to date.

### 6.2 STUDY AREA

#### Built Heritage

- 6.2.1. A 500m study radius has been applied to the Site boundary, within which built heritage assets (designated and non-designated heritage assets) have been identified for assessment. This study radius is considered to be a proportionate approach to the assessment, based upon an understanding of the Site, local topography, existing urban development, the significance of identified heritage assets and the nature of the Proposed Development.
- 6.2.2. Agreement will be sought during pre-application discussions with Horsham District Council to confirm that the study area is sufficient to assess the effects of the Proposed Development on the historic built environment.

#### Archaeology

- 6.2.1. A 1km buffer from the Site boundary has been used as a study area in order to characterise existing archaeological data and to assess the likely effects of the Proposed Development on the known and potential archaeological resource and historic landscape. This is an industry-standard study area for assessing the Proposed Development and provides a proportionate approach to assessment. This also forms the basis of the requested Historic Environment Record data search from West Sussex County Council.

Additionally, a wider 2km buffer was applied to capture any specific designated archaeological and historic landscape sites, from which there may be views of the Proposed Development and therefore potential impact to the wider settings of these assets.

### 6.3 BASELINE CONDITIONS

Archaeological sites, monuments and other heritage assets are recorded in national and/or local historic environment databases, in this instance the National Record of the Historic Environment (NRHE) held by Historic England (**Ref. 6.1**), and the West Sussex Historic Environment Record (HER) held by West Sussex County Council (**Ref. 6.2**). Listed buildings are recorded as part of the National Heritage List for England (NHLE), compiled by Historic England (**Ref. 6.3**). Details of conservation areas (including conservation area appraisals) and listed buildings are compiled locally by the local planning authority. Finds made by metal detectorists are reported through the Portable Antiquities Scheme (PAS) (**Ref. 6.4**).

These data sources have been used in the preparation of this chapter and to inform the approach to mitigation for the Site. In accordance with national and local planning policy, this assessment considers both designated and undesignated heritage assets within the study area, including:

- World Heritage Sites.
- Scheduled Monuments.
- Registered Battlefields.

- Registered Parks/Gardens.
- Listed Buildings.
- Conservation Areas.
- Locally Listed Buildings (including Parish Heritage Assets identified through the Southwater Neighbourhood Plan).
- The Historic Landscape.
- Archaeological finds and features.

In addition to on-site assessment, the following sources will be consulted during the compilation of the baseline information:

- British Library (Ref. 6.5).
- West Sussex HER (Ref. 6.2).
- West Sussex Landscape Characterisation mapping (provided by the HER).
- West Sussex Record Office.
- Historic England National Heritage List (Ref. 6.3).
- The National Archives (Ref. 6.6).
- Other online sources e.g. historic maps, local history websites, LiDAR data, aerial photographs.

### **Built Heritage Receptors**

- 6.3.1. There are no designated built heritage assets within the Red Line Boundary, although some barns associated with Great House Farmhouse are included which are regarded as non-designated heritage assets.
- 6.3.2. There are 24 listed buildings within the 500m study radius, one of which is Grade II\* (Great House Farmhouse) and 23 of which are Grade II. There are additionally two Grade II\* listed buildings sitting just outside of the Study Area to the northwest at Christ's Hospital School, which have been included as part of the baseline to allow for a fully comprehensive assessment. All listed buildings are referred to by the name under which they were originally designated. The listed buildings within the study radius are regarded as having high importance in EIA terms, reflecting their status as statutorily listed buildings of national significance.
- 6.3.3. There are nine Parish Heritage Assets within the study area, which have been identified via the Neighbourhood Plan and are treated as locally interesting non-designated heritage assets. These local heritage assets are regarded as having low importance in EIA terms.
- 6.3.4. Great House Farmhouse (Grade II\*) is entirely enclosed by the Site on all sides, although its associated barns lie within the Red Line Boundary. Eleven Grade II listed buildings and one Parish Heritage Asset are proximate to the western boundary of the Site, located on Two Mile Ash Road (Old Lodge to North East of Christ's Hospital; East Lodge and gateway, Christ's Hospital School; Sluetts, Christ's Hospital (now Field End Cottage); Lanaways Farmhouse, Christ's Hospital; Lanaways Barn; Bodiman's, Christ's Hospital; Barn to North West of Sayers Farmhouse, Christ's Hospital; Sayers Farmhouse, Christ's Hospital; Swains; Barn to North West of Marlpost Farmhouse; Marlpost Farmhouse and Bax Castle Public House).

- 6.3.5. A group of three, Grade II listed buildings (Holy Innocents Church, Vicarage Cottage and Southwater House), are located to the south of the Broadacres development and are located to east of the outlying section of the Site.
- 6.3.6. College Farmhouse, Grade II, is located at the eastern edge of the Site, now experienced within the Broadacres development.
- 6.3.7. One Grade II listed building (Pond Farmhouse) and two Parish Heritage Assets are located along Worthing Road, to the east of the Site, experienced as part of the modern built environment of Southwater.
- 6.3.8. The rural, medieval landscape setting of Great House Farmhouse and its agricultural complex (and other isolated designated heritage assets) is a key reason given for its listing at Grade II\*.
- 6.3.9. The dispersed pattern of farmsteads and the linear pattern of key routeways is a key consideration with regard to the character and significance of the distinct hamlets that make up the landscape.
- 6.3.10. The group value of all the local listed buildings including Great House Farm and the parish church and vicarage, and heritage components of this dispersed group currently does not represent a suburban or edge of settlement group but illustrates the dispersed nature of the historic settlement pattern that encompasses several named places, for example, Bonfire Hill, Crockhurst, Marlpot and other local hamlets and areas.
- 6.3.11. Further analysis will look at to what degree the historic hamlet of Southwater Street and the historic industrial centres have been subsumed into the suburban area of modern Southwater but other areas such as Great House Farm and Bonfire Hill remain recognisable as part of a rural dispersed settlement.
- 6.3.12. Each of these local places has a distinct character, each is individual and separate to places such as the hamlet of Southwater Street, the substantial agricultural complex of Great House Farm or the area of industrial activity and dwellings that is centred on the portion of Worthing Road close to the brickworks, or the former railway industrial heritage of the Downs link and the former railway station.
- 6.3.13. The streetscape will be designed to respond to local character, with carriageway sections to have distinct character areas, be significantly narrower than previous proposals, and reflect a village and agricultural feel – especially passing by Great House Farm and its associated barns.
- 6.3.14. Some heritage assets falling within the 500m study area would be scoped out of the ES Chapter, based upon the distance they are located from the Site, the nature of the intervening townscape/landscape, the importance of the heritage assets, and the varying degrees to which they derive importance from their settings. A full list of in-scope and out-of-scope built heritage assets is provided in **Table 6-3**.

### **Archaeological Receptors**

- 6.3.15. Baseline conditions have been established from scrutiny of the data returned as part of the HER search, as well as comprehensive research, analysis of Lidar data, aerial imagery and a site walkover survey in 2021. A further walkover survey will take place in 2025, which will also be informed by a historic map regression exercise and ground-truthed in the field, particularly in terms of historic landscape features. All data has been combined within a GIS workspace to allow for layers of data to be scrutinised both temporally and spatially to build up a historic baseline narrative for the development of the Site and its wider context from the Palaeolithic to the present day.

- 6.3.16. There are no Scheduled Monuments within the Site, nor within the wider study area. The nearest Scheduled Monuments are located c.1.7km to the northeast and c.2km to the west of the Site, comprising a medieval moated site and fishponds at Chesworth House and a medieval moated site at Sedgwick Castle. Sedgwick Castle also lies within a wider Grade II Registered Park and Garden, a former medieval deer park.
- 6.3.17. No World Heritage Sites or Historic Battlefields are located within proximity of the Site.
- 6.3.18. A large part of the central and the southern portion of the Site lies within an Archaeological Notification Area (ANA), as defined by West Sussex County Council. ANAs are areas that indicate the existence, or probable existence, of archaeological heritage assets. They have been created from the information held on the West Sussex HER and are a form of early warning system so that appropriate steps can be taken to record and protect heritage assets in advance of development.
- 6.3.19. A total of 91 archaeological point records were returned within the 1km study area search of the West Sussex HER in 2022. A further updated search will be carried out for 2025. None of the points recorded in 2021 were within the Site itself. Approximately half of these entries record historic farmsteads of medieval and post-medieval date, the data having been biased by the influx of sites onto the HER by virtue of the 2006 Forum Heritage Services report on Historic Farmsteads and Landscape Character in West Sussex (**Ref. 6.7**). No other key updated research frameworks or area surveys have been carried out since 2022. The remaining entries range from Mesolithic and Neolithic flint scatters through to a World War II anti-tank buoy, encompassing medieval settlement, industrial workings of medieval and post-medieval date, and 19<sup>th</sup> and 20<sup>th</sup> century railway and ribbon development.
- 6.3.20. The historic landscape within and surrounding the Site displays some considerable time depth and coherence, which is reflected in the relict field pattern, with the surviving boundaries of medieval date and pockets of ancient woodland with ghylls. The retention of ancient woodland, hedgerows, trees and field boundaries, as well as green corridors and a maintenance strip, is a key feature of the design.
- 6.3.21. A former manorial boundary of likely early medieval date survives largely extant forming a north-south spine through the Site, skirting Courtland Wood on its eastern side. This feature is not recorded in the HER but is clear in the landscape as a sinuous planted bank and ditch. Surviving hedgerows within the Site are all deemed 'Important' in accordance with the Hedgerows Regulations 1997 (as amended 2002) (**Ref. 6.8**).
- 6.3.22. The field pattern is a result of piecemeal enclosure through 'assarting' (clearing forested lands for use in agriculture or other purposes) in the medieval period, as indicated by remnant trees and mixed species within irregular hedgerow banks: this later gave way to predominantly arable agricultural use, with some pasture, hops and orchard, resulting in some historic boundary loss. The southern part of the Site has been subdivided by the embanked former Shoreham to Horsham (Christ's Hospital) railway branch line, which is now a popular recreational cycle and walking route.
- 6.3.23. The rural, medieval landscape setting of Great House Farmhouse and its agricultural complex (and other isolated designated heritage assets) is of archaeological significance.
- 6.3.24. The dispersed pattern of farmsteads is a key consideration with regard to the archaeological character, time-depth and significance of the distinct farmsteads and hamlets that make up the landscape.

6.3.25. It is considered that there is a moderate potential for deposits of earlier prehistoric, later prehistoric (Iron Age) and Romano-British date within the Site, and a low to moderate potential for deposits dating to the Anglo-Saxon and Medieval periods within the Site. There is a moderate potential for post-medieval deposits relating to the agricultural use of the site. The significance of any such remains, where present, are likely to be of local or regional significance. Nationally significant remains of schedulable quality are not anticipated.

## 6.4 PROPOSED ASSESSMENT METHODOLOGY/SCOPE OF ASSESSMENT

The assessment will focus on built heritage assets, historic landscape features and below-ground archaeological remains that are likely to be impacted by the Proposed Development.

The criteria detailed within **Table 6-1** below will be used for assessing receptor importance/sensitivity:

**Table 6-1 - Receptor Importance/Sensitivity criteria for both Built Heritage and Archaeology**

Receptor Importance/Sensitivity	Criteria for defining level
High	<p><i>Heritage assets of national importance. Scheduled Monuments, Listed Buildings (Grade I, II*, II), Registered Historic Parks and Gardens (Grade I, II*, II), Protected Wrecks, Protected Military Remains.</i></p> <p><i>Also includes unscheduled sites and monuments of schedulable quality and/or importance discovered through the course of evaluation or mitigation.</i></p> <p><i>Designated and undesignated historic landscapes of outstanding interest, or high quality and importance and of demonstrable national value. Well-preserved historic landscapes, exhibiting considerable coherence, time-depth or other critical factors.</i></p> <p><i>Palaeogeographic features with a demonstrable high potential to include artefactual and/or palaeoenvironmental material, possibly as part of a prehistoric site or landscape.</i></p>
Medium	<p><i>Heritage assets of regional importance. Conservation Areas, Historic townscapes and landscapes with reasonable coherence, time-depth and other critical factor(s).</i></p> <p><i>Unlisted assets that can be shown to have exceptional qualities or historic association.</i></p> <p><i>Designated special historic landscapes. Undesignated historic landscapes that would justify special historic landscape designation, landscapes of regional value. Averagely well-preserved historic landscapes with reasonable coherence, time-depth or other critical factors.</i></p> <p><i>Prehistoric deposits with moderate potential to contribute to an understanding of the palaeoenvironment.</i></p> <p><i>Designated or undesignated assets (including historic landscape) that contribute to regional research objectives.</i></p>
Low	<p><i>Locally Listed Buildings (including Parish Heritage Assets).</i></p> <p><i>Undesignated assets (including historic landscape) of local significance.</i></p> <p><i>Assets compromised by poor preservation and/or poor survival of contextual associations.</i></p>

Receptor Importance/Sensitivity	Criteria for defining level
	Assets of limited importance, but with potential to contribute to local research objectives.
Negligible	Assets with very little or no surviving archaeological interest <i>due to poor preservation or survival. Landscapes with little or no significant historical interest.</i>

Impacts of development may be direct on buildings, monuments, boundaries or buried remains as a result of destruction, truncation, compression, vibration, or drying out (where waterlogged). Indirect impacts may arise from a reduction of the appreciation of the resource by, for example, visual intrusion, noise and dust, or by severance (i.e. removal of a monument or site from its context).

The following criteria outlined in **Table 6-2** below will be used for assessing magnitude of impact to receptors:

**Table 6-2 - Magnitude of Impact Criteria**

Magnitude of Impact	Criteria for defining level
High	Complete destruction or a fundamental, substantial change of an asset or historic environment feature. Change to key elements of a heritage asset or its setting such that its importance is totally or significantly altered.
Medium	A considerable change or appreciable difference to the existing baseline. Changes to key materials/ fabric such that the importance of the heritage asset is significantly modified. Considerable changes to setting that affect the character or importance of the asset.
Low	Changes to materials/ fabric such that the importance of the heritage asset is slightly different. Minor change to the setting of a heritage asset. A minor change to the baseline condition of a heritage asset.
Negligible	Very slight change to material/fabric of a heritage asset that makes little contribution to its importance. No perceptible change to the setting of a heritage asset. A barely distinguishable change to the historic environment baseline.
None	No change or a change to fabric of a heritage asset that makes no contribution to its importance. No change to the setting of a heritage asset.

Professional judgement is applied to arrive at a statement of significance, taking into account the value of the feature or asset, and all relevant aspects of the predicted change, including the susceptibility to change of the nature and magnitude predicted; the proportion and importance of the asset or its setting that will be affected; the duration of the effect, and whether the effect is direct or indirect. This will be applied to the Enabling, Construction and Operational phases of the Proposed Development.

The assessment of effect is a combination of the sensitivity/importance of the heritage asset and the magnitude of potential impact on that asset. Effects can be adverse or beneficial and temporary or permanent.

Beneficial effects are those that mitigate existing impacts and help to restore or enhance the importance/value of heritage assets, therefore allowing for greater understanding and appreciation of them.

Effects that are minor or negligible in scale are considered not significant, whereby effects that are major or moderate (beneficial or adverse) are considered significant in EIA terms.

## 6.5 DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

### BUILT HERITAGE

The Site does not contain any statutorily listed buildings, although it contains an area of barns associated with Great House Farmhouse, some of which are historic in date and regarded as non-designated heritage assets. Proposals to redevelop the barns area within the Site would include the retention of these historic barns.

In assessing potential effects of the Proposed Development, a further consideration will be whether the proposals could cause harm to the importance of any built heritage assets through changes to their respective settings. The NPPF defines 'setting' as the surroundings in which an asset is experienced. It further makes clear that 'elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or be neutral' (**Ref. 2.4**).

The relevant legislation stems from s.66 of the 1990 Act (**Ref. 6.9**) which states that in considering whether to grant planning permission for development which affects a listed building or its setting, the decision maker shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses. Whilst there is no statutory duty in primary legislation to have regard to the setting of non-designated heritage assets there is nevertheless a clear requirement under the NPPF to give great weight to the conservation of heritage assets and their settings.

Effects to the historic built environment during the construction stages would be temporary and short term, relating to views of construction equipment and hoardings.

Consideration will be given to visual effects arising from the operational Proposed Development, as well as the potential for additional noise, light, vibration or odour. Other effects on setting, such as historic or cultural associations, will also be considered.

The setting of Great House Farmhouse (Grade II\*), enclosed by the Site, but lying outside the Site boundary, is likely to alter as a result of the Proposed Development but with appropriate mitigation measures in place it is considered that the effects can be reduced and minimised and would not be regarded as significant in EIA terms.

- 6.5.1. Listed buildings and non-designated heritage assets around the edges of the Site may experience mid-distance views of the Proposed Development, but with appropriate mitigation measures in place it is considered that the effects could be reduced.

**Archaeology**

- 6.5.2. During the enabling and construction phase, ground reduction, installation of new services, sub-surface water drainage and the cutting or piling of foundations are, without mitigation, likely to have a direct and widespread adverse effect on any previously unknown buried archaeological evidence. Such impacts would be permanent and irreversible.
- 6.5.3. General construction activities that cause vibration and the weight and movement of construction traffic and plant could also directly impact on any previously unknown archaeological assets over the short term with possible temporary and permanent results.
- 6.5.4. Without appropriate mitigation prior to construction, the Proposed Development can be expected to have a major magnitude of impact on any previously unknown archaeological deposits, resulting in the potential for significant effects.
- 6.5.5. Embedded mitigation is included as part of the Proposed Development which has been heritage and landscape led, and as such no significant effects are anticipated in terms of the historic landscape.
- 6.5.6. **Table 6-3** identifies the elements scoped in or out of further assessment.

**Table 6-3 - Elements Scoped in or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
Great House Farmhouse, Grade II* (NHLE ref: 1286023)	Construction and Operation	✓		Indirect impacts to setting of the listed building and associated barns as non-designated heritage assets.
Old Lodge to North East of Christ's Hospital, Grade II (NHLE ref: 1027033)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
East Lodge and gateway, Christ's Hospital School, Grade II (NHLE ref: 1462525)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Sluetts, Christ's Hospital, Grade II (NHLE ref: 1027035)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Lanaways Farmhouse, Christ's Hospital, Grade II (NHLE ref: 1027036)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Lanaways Barn, Grade II (NHLE ref: 1119726)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Bodimans, Christ's Hospital, Grade II (NHLE ref: 1354171)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Barn To North West Of Sayers Farmhouse, Christ's Hospital, Grade II (NHLE ref: 1027038)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Sayers Farmhouse, Christ's Hospital, Grade II (NHLE ref: 1027037)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Swains, Grade II (NHLE ref: 1027064)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Barn to North West of Marlpost Farmhouse, Grade II (NHLE ref: 1354146)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.

Element	Phase	Scoped In	Scoped Out	Justification
Marlpost Farmhouse, Grade II (NHLE ref: 1193394)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
College Farmhouse, Grade II (NHLE ref: 1354174)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Vicarage Cottage, Grade II (NHLE ref: 1027059)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Holy Innocents Church, Grade II (NHLE ref: 1259780)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Southwater House, Grade II (NHLE ref: 1409948)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Pond Farmhouse, Grade II (NHLE: 1027041)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Dining Hall and Water Tower to North, School to South, Colonnaded Wings to East and West (Chapel in West Wing) Forming a Quadrangle, and 8 H Shaped Blocks (4 on each side of Dining Hall) at Christ's Hospital, Grade II* (NHLE ref: 1027034)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Arts Centre and Music School at Christs Hospital, Grade II* (NHLE ref: 1247243)	Construction and Operation	✓		Potential indirect effects to the setting of the listed building arising from development.
Griggs, Grade II (National Heritage List for England (NHLE) reference: 1027032)	Construction and Operation		✓	Given the distance of the listed building from the Site and intervening A24, it is considered that the Proposed Development would not affect its setting.

Element	Phase	Scoped In	Scoped Out	Justification
Lawson's Farmhouse, Grade II (NHLE reference: 1193693)	Construction and Operation		✓	Given the distance of the listed building from the Site it is considered that the Proposed Development would not affect its setting.
The Cock Inn, Grade II (NHLE reference: 1027042)	Construction and Operation		✓	The listed building is surrounded by modern development within its close setting. There would be no effects arising to its extended setting or special interest by the Proposed Development.
Jasmine Cottage, Wheelwright House, Grade II (NHLE reference: 1193754)	Construction and Operation		✓	The listed building is surrounded by modern development within its close setting. There would be no effects arising to its extended setting or special interest by the Proposed Development.
Wellers Farm, Grade II (NHLE reference: 1026822)	Construction and Operation		✓	The listed building is surrounded by modern development within its close setting. There would be no effects arising to its extended setting or special interest by the Proposed Development.
Blake's Farmhouse, Grade II (NHLE reference: 1286074)	Construction and Operation		✓	The listed building is surrounded by modern development within its close setting. There would be no effects arising to its extended setting or special interest by the Proposed Development.
Nye's Cottage, Grade II (NHLE reference: 1027073)	Construction and Operation		✓	The listed building is surrounded by modern development within its close setting. There would be no effects arising to its extended setting or special interest by the Proposed Development.
Bax Castle Public House, Non-designated heritage asset	Construction and Operation	✓		Potential indirect effects to the setting of the non-designated heritage asset arising from development.
Hen and Chicken Public House	Construction and Operation	✓		Potential indirect effects to the setting of the non-designated heritage asset arising from development.

Element	Phase	Scoped In	Scoped Out	Justification
Pump Cottage, Non-designated heritage asset	Construction and Operation	✓		Potential indirect effects to the setting of the non-designated heritage asset arising from development.
Ye Olde Barn, Worthing Road, Non-Designated Heritage Asset	Construction and Operation		✓	The non-designated heritage asset is surrounded by modern development within its close setting. There would be no effects arising to its extended setting or local importance by the Proposed Development.
Old School, Worthing Road Non-Designated Heritage Asset	Construction and Operation		✓	The non-designated heritage asset is surrounded by modern development within its close setting. There would be no effects arising to its extended setting or local importance by the Proposed Development.
Calcot, Worthing Road, Non-Designated Heritage Asset	Construction and Operation		✓	The non-designated heritage asset is surrounded by modern development within its close setting. There would be no effects arising to its extended setting or local importance by the Proposed Development.
The Old Post Office, Worthing Road, Non-Designated Heritage Asset	Construction and Operation		✓	The non-designated heritage asset is surrounded by modern development within its close setting. There would be no effects arising to its extended setting or local importance by the Proposed Development.
Archaeological finds and features	Construction	✓		Potential for direct physical impacts
Medieval manorial boundary	Construction and Operation	✓		Potential for direct physical impacts and changes to setting
Surviving historic hedgerows/shaws	Construction and Operation	✓		Potential for direct physical impacts and changes to setting
Relict medieval landscape	Construction and Operation	✓		Potential for direct physical impacts and changes to setting

Element	Phase	Scoped In	Scoped Out	Justification
Historic routeways	Construction and Operation	✓		Potential for direct physical impacts and changes to setting
Sedgwick Castle moated site Scheduled Monument	Construction and Operation		✓	There would be no effects arising to its extended setting or significance by the Proposed Development
Moated site and fishponds at Chesworth House	Construction and Operation		✓	There would be no effects arising to its extended setting or significance by the Proposed Development
Sedgwick Park RPG	Construction and Operation		✓	There would be no effects arising to its extended setting or significance by the Proposed Development

## 6.6 MITIGATION AND OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

### Built Heritage

A Construction Environmental Management Plan (CEMP) would be implemented for the Site to reduce the effects of construction on built heritage assets, in accordance with an appropriately worded condition as agreed with Horsham District Council (HDC). This will be treated as embedded mitigation for the purposes of assessing magnitude of impact and thereby significance of effects of construction.

Good quality design will be an integral part of the design process for the Proposed Development, including the application of a high-quality architectural design relating to form and materials, along with public realm benefits. The assessment will consider these embedded mitigation measures for the purposes of assessing magnitude of impact and thereby significance of operational effects.

The Proposed Development explores opportunities to reveal the significance of Great House Farm through restoration of the listed building, as noted by Historic England - *'restoration of the front elevation of the farmhouse and its repair would be a clear enhancement and would deliver heritage benefits that could help to offset the harm to some degree'*.

At present the surroundings of Great House Farmhouse include a range of barns. A number of these structures are of no historic or architectural interest and interrupt the former intervisibility between surviving historic barns within the group and the principal listed building (the farmhouse). Redevelopment of the barns area, retaining the historic barns and removing later structures of poorer quality, would offer important opportunities to re-establish the historic spatial relationship with Great House Farmhouse and allow for enhanced appreciation of its importance as part of a wider farmstead.

The proposal aims to deliver the 'clear heritage benefit' identified by the Council and Historic England in 2022 to the barns group by removal of modern industrial elements, sensitive restoration and finding new, authentic uses especially for Barns A-C. This could take place within a new carefully considered character area, potentially called Orchard Barns, the design of which would be informed by Historic England's Farmstead Guidance. This is recognised as beneficial in heritage terms for both the non-designated assets and for Great House Farm.

The proposal aims to create an active heritage area near to Great House Farm. New public engagement benefits can also be weighed in the planning balance against potential harm to heritage assets and their setting.

The retention of Public Rights of Way, ancient woodland, hedgerows, trees and field boundaries, as well as green corridors is a key feature of the design.

At present the built-up edges of Southwater are clearly visible in mid-distance outward views from a number of listed buildings located to the western edges of the Site. Through application of an appropriate landscaping strategy as part of the Proposed Development it will be possible to screen or filter some of these views, to reinforce and strengthen the rural character of the listed buildings' settings and soften the transition with adjacent urban development. The strength of beneficial effects will magnify as planting matures.

## Archaeology

It is expected that the Site will be subject to a range of archaeological mitigation options to inform the scope and timing of further archaeological fieldwork, and to inform the emerging masterplan for the Proposed Development.

No construction phase work will commence prior to the completion of an agreed scope of archaeological investigation and reporting, to be agreed in advance with the Local Planning Authority and their archaeological advisors, which can be secured by an appropriate planning condition attached to the granting of any consent.

Following a program of appropriate archaeological mitigation prior to the construction phase, no significant archaeological effects are identified as all archaeological evidence present within the Site will have been removed, preserved by record or preserved in situ.

The presence of 'Important' hedgerows and other historic landscape features should not preclude development. The emerging masterplan will be careful to preserve the hedgerows themselves and the boundaries they represent, physically or in design as embedded mitigation.

The Proposed Development seeks to minimise the impact to the historic landscape through a combination of retention and avoidance and attempts to be a sympathetic heritage-led development at a scale and grain which will fit comfortably into its surroundings.

## 6.7 LIMITATIONS AND ASSUMPTIONS

- 6.7.1. The assessment of the scale of effects is based on extensive professional experience gained on other major developments across London and the south of England.
- 6.7.2. The assessment will assume the accuracy of the available datasets reviewed in its compilation. The archaeological and historic landscape desk-based assessment was undertaken in 2022 to support a previous iteration of the Proposed Development and has been revised in 2025. The Built Heritage Assessment also undertaken in February 2022 and revised in 2025, includes a range of both desk and site-based assessment. The Archaeological Officer at Surrey County Council has noted in their advice for projects in their jurisdiction that desk-based assessments are regarded by them as being valid for five years.
- 6.7.3. The information presented in the ES chapter and supporting technical appendices (which will include an Archaeological Desk Based Assessment) will provide an indication of below-ground archaeological assets present or likely to be present, rather than a definitive list of all assets likely to be present, as the full extent of below ground archaeological assets cannot be known prior to site-specific archaeological field investigation.
- 6.7.4. The principal limitation to the assessment of effects upon below-ground heritage assets is the nature of the archaeological resource, which is buried and therefore not visible. This means it can be difficult to accurately predict the presence and likely importance of below-ground heritage assets, and the likely impact (and resultant effects) of the Proposed Development upon such assets.

## 7 ECOLOGY

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### 7.1 CONSULTATION

7.1.1. See Section 3.2 of Chapter 3 for information on consultation.

### 7.2 STUDY AREA

7.2.1. The majority of ecological survey work focuses on the main site area, described in Chapter 2 above, where this is affected by the Proposed Development and associated landscape, drainage and access infrastructure.

7.2.2. Where appropriate, the study area extends beyond the Site boundary, including:

- During the desk study, protected species records were sought for an area of approximately 2km around the Site and the check for designated sites was extended to an area of up to 10km from the Site boundary.
- [REDACTED]
- The Great Crested Newt eDNA survey was extended to off-site ponds up to 300m from the Site boundary where accessible. This reflects the 250m routine maximum migratory distance of Great Crested Newts away from ponds outside the breeding season.

### 7.3 BASELINE CONDITIONS

7.3.1. This section is based on the emerging findings of a suite of specific studies conducted at the Site since 2019. These include a Phase 1 habitat survey, an ecological desk study, a hedgerow survey, a Phase 2 botanical survey, and protected species surveys for bats, dormice, water vole, otter, breeding and wintering birds, reptiles, great crested newts and invertebrates completed between 2019 and 2022. Where appropriate these works are being updated in support of the forthcoming application. An Ecological Appraisal report (including the extended Phase 1 Habitat Survey and desk study) (**Ref. 7.1**) was produced to support the previous iteration of the design in 2022, including Figures 8.1-8.12 developed to support the previous iteration, which summarise the findings of previous habitat and protected species survey work.

7.3.2. **Table 7-1** provides a brief summary of the findings of the field surveys carried out at the Site to date and the strategy for updating relevant surveys, where necessary, in support of the current application. A brief summary of the findings of the surveys is given below, albeit where surveys are currently being updated these should be treated as provisional.

**Table 7-1 – Emerging findings of field surveys and ongoing survey work**

Date of Survey	Ongoing Survey Work	Initial findings of Surveys
<b>Ecological desk study</b>		
2019	Being updated.	<p>No statutory designated areas are located within or immediately adjacent to the Site.</p> <p>No internationally designated areas such as Special Protection Areas (SPAs) or Special Areas of Conservation (SACs) are located within 10km of the Site. No National Nature Reserves (NNRs) or Local Nature Reserves (LNRs) within 5km of the Site.</p> <p>Four Sites of Special Scientific Interest (SSSIs) are located within 5km of the Site. These are Slinfold Stream and Quarry SSSI (3.9km to the north-west), St Leonard’s Park Ponds SSSI (4.2km to the north-east), St Leonard’s Forest SSSI (4.5km to the north-east) and Coneyhurst Cutting SSSI (4.9km to the south-west).</p> <p>The northern area of the Site lies within the 4-5km Impact Risk Zone (IRZ) for St Leonard’s Park Ponds SSSI and St Leonard’s Forest SSSI.</p> <p>One non-statutory designated site, namely Courtland Wood Local Wildlife Site (LWS), is located within the Site boundary. Four further LWSs lie within 2km of the Site, including Sparrow Copse LWS (460m to the north-west), Southwater Country Park Complex LWS (550m to the south-east), High Wood LWS (1.4km to the north-west) and The Downs Link, Nutham Wood and Greatsteeds Farm LWS (1.6km to the south-east).</p> <p>Seventy-nine units of woodland included on Natural England’s Ancient Woodland Inventory are located within 2km of the Site. Three of these units are located within the Site including Smith’s Copse, Courtland Wood and Two Mile Ash Gill. Courtland Wood and Two Mile Ash Gill are located adjacent to each other in one woodland area.</p> <p>Desk study records of protected and notable species provided for the Site itself include records of Brown Long-eared bat, Cuckoo, Nightingale, Grass Snake, Common Lizard, Great Crested Newt, Brown Hairstreak butterfly and notable plants including native Bluebell, Wild Strawberry, Greater Butterfly Orchid and Wood Sorrel. Other species recorded in the vicinity of the Site include 10 further bat species, Hazel Dormouse, Water Vole, 56 further bird species, Adder, and a number of notable invertebrates and plants.</p>

Date of Survey	Ongoing Survey Work	Initial findings of Surveys
<b>Phase 1 habitat survey</b>		
2019	Being updated.	<p>In general terms, the Site comprises a series of arable fields, semi-improved grassland fields and improved grassland fields bordered by hedgerows, treelines and fence lines. Other habitats present include areas of broadleaved woodland, mixed woodland and tall ruderal vegetation. In addition, the Marlpost Gill flows in a southerly direction through the western part of the Site.</p> <p>The habitats of highest nature conservation interest within the Site include Courtland Wood LWS and the other areas of ancient woodland. Also of interest are the network of hedgerows, mature trees, treelines, other small pockets of broadleaved woodland, the Marlpost Gill corridor, ditches and ponds.</p> <p>Other habitats within the Site, including the extensive arable land and semi-improved grassland fields that dominate the Site have nature conservation value at no more than a local level in their own right.</p>
<b>Hedgerow survey</b>		
2021/ 2022	No further survey proposed	<p>The network of hedgerows across the Site is characterised by mature and dense managed species-rich hedgerows on field boundaries intermixed with occasional species-poor hedgerows and lines of trees. Ground flora associated with the hedgerows primarily comprises species-poor ruderal and grassland vegetation.</p> <p>Results of the hedgerow surveys suggest many of the hedgerows within the scoping boundary qualify for consideration as 'important' under the 'Wildlife and Landscape' criteria set out in the 1997 Hedgerow Regulations.</p>
<b>Phase 2 botanical survey</b>		
2021/ 2022	Previous findings being reviewed on the ground.	<p>The grassland subject to Phase 2 botanical survey is relatively species rich in comparison to that occurring elsewhere in the Site. However, initial results suggest no areas of grassland within the scoping boundary qualify for consideration as Biodiversity Action Plan (BAP) Priority Habitats or a 2006 Natural Environment and Rural Communities (NERC) Act Habitats of Principal Importance.</p> <p>No protected or notable plant species, other than Bluebell, have been recorded from habitats within the Site.</p>

Date of Survey	Ongoing Survey Work	Initial findings of Surveys
<b>Phase 1 and 2 bat surveys</b>		
2021/ 2022	The Bat Activity (walked transects and remote detectors) and Phase 1 and Phase 2 bat roost survey surveys are being updated.	<p>A number of confirmed and possible bat roosts have been identified within individual trees (T) and buildings (B) within and adjacent to the Site during the Phase 2 bat roost survey work. These are:</p> <ul style="list-style-type: none"> <li>■ B12 supports a confirmed occasional/transitory roost for low numbers of Common Pipistrelle and an individual Soprano Pipistrelle. In addition, B12 supports a probable occasional/transitory roost for an individual Brandt's bat;</li> <li>■ Tree 216 supports a confirmed occasional/transitory roost for low numbers of Common Pipistrelle and Soprano Pipistrelle. In addition, Tree 216 supports a probable occasional/transitory roost for an individual Bechstein's bat;</li> <li>■ Tree 188 supports probable occasional/transitory roosts for two Common Pipistrelle bats and an individual Soprano Pipistrelle;</li> <li>■ B6, B16 and Trees 20 and 207 support confirmed/probable occasional/transitory roosts for two Common Pipistrelle bats;</li> <li>■ Trees 95, 217 and 349 support confirmed/probable occasional/transitory roosts for individual Common Pipistrelle bats; and</li> <li>■ Trees 53 and 254 support probable bat roosts for unidentified bat species.</li> </ul> <p>No further bat roosts were identified within the Site.</p> <p>In addition to the bat roosts described above, a number of other buildings and trees have been identified as having low or higher potential to support roosting bats but have not been found to support active roost sites to date. The locations of the confirmed and possible bat roosts, and the features having potential to support roosting bats are available in the PEA submitted in 2022.</p> <p>The suite of bat activity transect, automated and dusk emergence surveys undertaken in 2022 confirmed the presence of at least nine bat species using the Site on at least an occasional basis for foraging and commuting. The majority of activity related to relatively common and widespread species including Common Pipistrelle and Soprano Pipistrelle bats. The majority of Common Pipistrelle and Soprano Pipistrelle activity was associated with the Downs Link crossing east-west through the south of the Site and the woodland belts in the north of the Site. Noctule bats, <i>Myotis</i> sp., Brown Long-eared bat, Serotine and Leisler's bats were also recorded from similar habitats on a less frequent basis. In addition, Barbastelle and Nathusius' Pipistrelle bat were recorded using the survey area during the automated detector surveys. A summary of bat activity recorded during the bat activity transect surveys is available in the PEA submitted in 2022.</p>

Date of Survey	Ongoing Survey Work	Initial findings of Surveys
<b>Dormouse survey</b>		
2021/ 2022	Being updated.	No evidence of Dormouse was identified during the 2021/ 2022 survey. No evidence of Dormouse has been identified during the updated survey to date.
<b>Otter survey</b>		
2021/ 2022	Being updated.	No evidence of Otter was identified during the 2021/ 2022 survey. No evidence of Otter has been identified during the updated survey to date.
<b>Water Vole survey</b>		
2021/ 2022	Being updated.	No evidence of Water Vole was identified during the 2021/ 2022 survey. No evidence of Water Vole has been identified during the updated survey to date.
[REDACTED]		
[REDACTED]	[REDACTED]	[REDACTED]
<b>Breeding and wintering bird surveys</b>		
2021/ 2022	Being updated.	<p>Wintering birds:</p> <p>Eleven of the species recorded using the Site during the 2021/2022 survey are currently included in the Birds of Conservation Concern (BoCC) Red or Amber lists. These are:</p> <ul style="list-style-type: none"> <li>■ Red listed species: House Sparrow, Song Thrush, Linnet and Starling; and</li> <li>■ Amber listed species: Dunnock, Song Thrush, Grey Wagtail, Redwing, Starling, Woodpigeon and Wren.</li> </ul> <p>Breeding birds:</p> <p>Eight of the species recorded breeding or holding a significant portion of a breeding territory within the Site during the 2021/2022 survey are currently included in the Birds of Conservation Concern (BoCC) Red or Amber lists. These are:</p>

Date of Survey	Ongoing Survey Work	Initial findings of Surveys
		<ul style="list-style-type: none"> <li>■ Red listed species: House Sparrow and Greenfinch; and</li> <li>■ Amber listed species: Dunnock, Song Thrush, Tawny Owl, Whitethroat, Woodpigeon and Wren.</li> </ul>
<b>Reptile survey</b>		
2021	Being updated.	Low populations of Common Lizard, Grass Snake and Slow-worm have been recorded at the Site.
<b>Great Crested Newt survey</b>		
2021/ 2022	eDNA and HSI surveys were conducted during spring 2021. These are being updated.	Great Crested Newts have been recorded as absent from all the waterbodies subject to sampling during the 2021/ 2022 survey, however a single Great Crested Newt was recorded in terrestrial habitat during other fieldwork in the central area of the Site in 2021. It is expected that this newt relates to an off-site pond that was inaccessible for survey.
<b>Invertebrate survey</b>		
2021/ 2022	Further survey for Brown Hairstreak will be undertaken.	<p>The Invertebrate Survey found that the vast majority of the Site, notably the arable fields and pastures, comprises habitat of low invertebrate interest. The woodlands within the Site were found to provide only limited habitat for invertebrates due to an absence of recent management and high levels of shading. Wetlands within the Site were also found to be of limited value for invertebrates primarily due to their largely temporary hydrology and low water levels.</p> <p>Habitats of higher interest for invertebrates include the network of hedgerows and field margins across the Site. A relatively small number of scarce and threatened invertebrate species were recorded during the surveys and the Site is considered to be of Local value for invertebrates as a whole.</p> <p>The most notable record made during the surveys was an adult female Brown Hairstreak butterfly on Bramble in the north of the Site.</p>

- 7.3.13. The presence of invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 have been, and will continue to be, recorded as incidental information during the surveys described above.
- 7.3.14. In addition to confirmation on the scope of the survey work listed above as part of the EIA Scoping process, where it is stated that surveys will not be updated as part of the current application, it is also requested that the LPA confirm support for this approach.

## 7.4 PROPOSED ASSESSMENT METHODOLOGY

- 7.4.1. The methodologies for each of the field surveys completed or ongoing at the Site in support of the current application are summarised below. Full details of the methodology for each specialist ecological survey undertaken to date will be given in the reports of survey.
  - Extended Phase 1 habitat survey: Carried out in accordance with the JNCC (2016) methodology (**Ref. 7.2**). Where appropriate this is being updated to reflect a UK Habitat Survey approach to ensure compatibility with the Biodiversity Net Gain Calculation.
  - Grassland Phase 2 botanical surveys: Takes the form of a walkover of the grassland fields following the approach given in Natural England's Technical Information Note TIN110 for assessment of whether grassland is a Biodiversity Action Plan (BAP) Priority Habitat (or Habitat of Principal Importance under the 2006 NERC Act). Grassland community also broadly assessed against National Vegetation Community (NVC) assemblages (**Ref. 7.3**).
  - Woodland Phase 2 botanical surveys: Takes the form of a walkover of the ancient woodlands to identify their character and broadly assess against National Vegetation Community (NVC) assemblages (**Ref. 7.4**).
  - Hedgerow survey: The hedgerows crossing and bordering the Site have been assessed against the 'Ecology and Landscape' Criteria set out in the 1997 Hedgerow Regulations (**Ref. 6.8**).
  - Bat Surveys: Includes a Phase 1 bat scoping survey and Phase 2 bat surveys comprising emergence surveys, activity surveys and/or tree climbing inspections to determine the presence/absence of bats in trees and buildings containing potential roost sites affected by the development proposals, and the use of habitats across the site by foraging and commuting bats. The bat survey work previously undertaken was carried out in accordance with the Bat Conservation Trust's 2016 guidelines (**Ref. 7.5**). The updated bat survey work is being carried out in accordance with the Bat Conservation Trust's 2023 guidelines (**Ref. 7.6**).
  - Dormouse survey: Comprises a nest tube survey of suitable areas of habitat, carried out in accordance with the standard methodology set out by Chanin and Woods (2003) (**Ref. 7.7**).
  - Water Vole and Otter surveys: Involves the comprehensive and systematic recording of all recognised Water Vole and Otter field signs, following the standard methodology described in the Water Vole Conservation Handbook (Dean et al, 2016) (**Ref. 7.8**) and the methodology described in the Otter Survey of England 1991-1994 (Strachan & Jefferies, 1996) (**Ref. 7.9**).
  - [REDACTED]

- Breeding and wintering bird surveys: Comprises a territory mapping exercise broadly following that outlined by Bibby, Burgess, Hill & Mustoe (2000) (**Ref. 7.11**) carried out over five visits between November and March (wintering) and five visits between April and July (breeding). On each visit a route is followed that allows all parts of the site and immediately adjacent habitat to be surveyed. All aural or visual bird encounters are noted.
- Reptile Survey: Involves installing artificial refugia in areas of habitat identified as potentially suitable for reptiles at a density of 5-10/ha to attract any reptiles present in accordance with Froglife reptile survey guidance (**Ref. 7.12**). The survey consists of a walkover of the Site checking the artificial refugia to identify the species present and their distribution on the Site. A visual search of the Site is also undertaken on these visits. Following installation of the artificial refugia, the Site is visited seven times during suitable temperature and weather conditions.
- Great Crested Newts: The locations of waterbodies within a 300m radius of the Site are identified from aerial photographs and maps. A Habitat Suitability Index (HSI) assessment is conducted on all accessible waterbodies within the survey area in line with the recognised methodology developed by Oldham et al. (2000) (**Ref. 7.13**). Following this, all waterbodies with suitability to support Great Crested Newts are subject to eDNA sampling following the recognised methodology established by Biggs et. al. (2014) (**Ref. 7.14**), with samples sent off for laboratory analysis. Where samples test positive for Great Crested Newt DNA, these waterbodies are subject to six-visit population estimate surveys using a combination of qualifying survey methodologies between April and June in line with the Great Crested Newt Mitigation Guidelines (English Nature, 2001) (**Ref. 7.15**) and subsequent research (Cresswell and Whitworth, 2004) (**Ref. 7.16**).
- Invertebrate Survey: Comprises a habitat potential assessment and subsequent targeted survey of terrestrial and aquatic invertebrates spanning spring, summer and autumn. The targeted terrestrial survey includes a range of survey techniques (pan traps, pitfall traps, window traps, sweep netting, beating and grubbing) to gather samples in the field. Samples are then sorted and identified to enable a preliminary evaluation of the importance of the site for invertebrates. Two ponds within the Site were surveyed and macroinvertebrate data were collated and analysed using the Predictive SYstem for Multimetrics (PSYM) tool to allow an assessment to be made of whether the ponds may qualify as a Habitat of Principal Importance. Aquatic macroinvertebrate sampling of the Marlpost Gill allows identification of macroinvertebrate families using these watercourses and assessment of their biological water quality, based on metrics applied to macroinvertebrate families. The forthcoming Brown Hairstreak survey involves a search for overwintering eggs on their larval food plant (Blackthorn).

7.4.2. The findings of the above work will be presented in the Ecology Chapter of the ES. The ES Ecology Chapter will identify and value any features of ecological importance on the site and their sensitivity to change. Features will be valued in accordance with CIEEM's 2018 '*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition*' (**Ref. 7.17**). Receptors are assessed within a defined geographical context based on the distribution and status of the receptor within this geographical area. The geographical scale at which an impact on the receptor is significant can then be determined.

7.4.3. Potential effects of the Proposed Development on ecological features will then be assessed. Where significant effects on features of ecological value are predicted, appropriate measures will be specified to avoid or mitigate those effects. Any residual effects on features of ecological value will

be described and their significance identified, which will be a product of the value of the feature and the magnitude of the effect. Ecological enhancement measures will be detailed in line with local and national planning policy.

- 7.4.4. In advance of a full assessment, the following sections seek to identify potential ecological receptors identified at the Site based on the studies carried out to date and the possible implications of development.

## 7.5 DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

### Designated Sites

- 7.5.1. No internationally designated areas such as SPAs or SACs are located within 10km of the Site and no NNRs or LNRs are within 5km of the Site. It is considered highly unlikely therefore that the Proposed Development would require Appropriate Assessment under the 2017 Conservation of Habitats and Species Regulations (as amended) (**Ref. 7.18**) subject to water neutrality measures being implemented to avoid effects of abstraction on distance SAC/ SPAs.
- 7.5.2. Four SSSIs are located within 5km of the Site and one non-statutory designated LWS, namely Courtland Wood, is located within the Site. In the absence of avoidance or mitigation measures negative effects on these areas from the Proposed Development may arise from direct loss, damage and fragmentation of habitats within and supporting these areas and indirect effects of air and water-borne pollution, lighting, noise, human disturbance and effects on hydrology. Development of the Site also provides opportunity for positive effects on the LWS through enhancement and management of associated habitats and creation of complementary supporting habitats. The Proposed Development may therefore result in both positive and negative effects on these receptors which are significant at a District level.

### Habitats

- 7.5.3. Other than the LWS discussed above, the habitats of highest value associated with the Site are other areas of ancient woodland, the network of hedgerows, mature trees, treelines, other small pockets of broadleaved woodland, the Marlpost Gill corridor, ditches and ponds. Potential effects on these habitats from the Proposed Development include direct loss, damage and fragmentation, changes in hydrology, or indirect effects from human disturbance, air and water pollution and increased noise and lighting. In the absence of avoidance or mitigation measures these effects have the potential to significantly affect these receptors at up to a District level.
- 7.5.4. The remainder of habitats within the Site, including species-rich and species-poor grasslands, arable land and ponds, are of no more than local interest in their own right and are not significant in an EIA context. Notwithstanding this, measures to protect and enhance retained areas of these habitats should be included in the scheme where appropriate.

### Legally Protected Species

- 7.5.5. Legally protected species to be considered are as follows:
- **Bats:** The emerging development proposals indicate that bat roosts may be lost or adversely affected by the Proposed Development which, in the absence of avoidance measures, could affect roosting bats at least a Local level. In the absence of mitigation, the Proposed Development also has potential to affect foraging and commuting bats through direct loss of woodland, grasslands, trees, scrub, and hedgerow habitats which may result in a decline in the

availability of foraging and commuting habitat and impacts of lighting on retained areas of foraging habitat and commuting routes. These effects may be significant at a District Level and are therefore scoped into the EIA.

- Hazel Dormouse: Dormice are currently considered absent from the Site and no significant effects on this species are expected as a result of the Proposed Development.
- Otter: Otters are currently considered absent from the Site and no significant effects on this species are expected as a result of the Proposed Development.
- Water Vole: Water Voles are currently considered absent from the Site and no significant effects on this species are expected as a result of the Proposed Development.
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- Breeding and Wintering Birds: The Site is considered to be of up to high local interest for birds. The Proposed Development would result in the loss of open farmland habitats and this would inevitably affect current populations of species of conservation interest associated with such habitats. In the absence of mitigation, effects on bird populations in combination across the Site therefore have the potential to be significant in an EIA context.
- Reptiles: Much of the area of habitat in which reptiles have been recorded will be affected by the Proposed Development. In the absence of mitigation, a proportion of the habitat supporting reptiles would be lost, and this may result in loss of habitat available and killing and injury of any reptiles present. Reptile numbers at the Site are however currently understood to be low and it is highly unlikely that significant effects on this group would arise as a result of the Proposed Development.
- Great Crested Newts: The Proposed Development has potential to result in loss of terrestrial habitat where it falls within 250m of any off-site breeding ponds. Numbers of terrestrial phase Great Crested Newts using the Site are however likely to be low and it is highly unlikely that significant effects on this group would arise as a result of the Proposed Development.
- Invertebrates: The Proposed Development will focus on areas of the Site comprising arable farmland and species-poor grassland of low invertebrate interest. In the event that substantial areas of woodland, mature trees, hedgerows and riparian habitat are lost or affected by the Proposed Development (see 'Habitats' section above) then this has potential to result in a significant effect on invertebrates.
- Plants: Several protected or notable plant species have been recorded from the Site however the Proposed Development will focus on areas of the Site comprising arable farmland and species-poor grassland of low botanical interest and it is highly unlikely that significant effects on individual plant species would arise as a result of the Proposed Development.

**7.5.6.** Table 7-2 outlines the elements scoped in or out of further assessment.

**Table 7-2 - Elements Scoped in or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
Designated sites	Construction and Operation	✓		Potential for direct and indirect physical impacts from new development construction and associated residents.
Habitats	Construction and Operation	✓		Potential for habitat loss, fragmentation, direct and indirect physical impacts from new development construction and associated residents.
Bats	Construction and Operation	✓		Roosting and foraging bats are present within the site.
Hazel Dormouse	Construction and Operation		✓	Current knowledge suggests that this species is absent from the site.
Otter	Construction and Operation		✓	Current knowledge suggests this species is not present at the site.
Water Vole	Construction and Operation		✓	Current knowledge suggests this species is not present at the site.
██████	██████████ ██████ ██████████	█		██
Birds	Construction and Operation	✓		Initial results suggest that the site supports a bird assemblage typical of farmland and woodland edge habitats.
Reptiles	Construction and Operation	✓		A low population of Common Lizard is present within the site.
Great Crested Newt	Construction and Operation	✓		A likely low population of Great Crested Newt is present in association with the site.
Invertebrates	Construction and Operation	✓		Habitats of interest for invertebrates within the site include the hedgerows, woodland and mature trees.
Plants	Construction and Operation		✓	Significant effects on individual plant species are unlikely.

## 7.6 MITIGATION

7.6.1. The potential mitigation measures discussed below are in outline and are indicative of the potential constraints. The relevance or success of any mitigation measures will depend on the outcome of further ecological survey and assessment and the mitigation recommendations may change in scope.

### Designated Sites and Habitats

- Development proposals will maintain a sufficient stand-off from the LWS, other ancient woodlands, ancient and/ or veteran trees, and other retained habitats at the site including hedgerows, ditches, woodland, scrub, trees, stream, ditches and ponds in order to avoid impacts on rooting zones, hydrology and their function as wildlife habitat and corridors for the movement of wildlife. Consideration will also be given to indirect impacts potentially arising from adjacent development such as lighting and disturbance. It is proposed that habitats sensitive to disturbance are afforded a wider buffer than less sensitive areas, and where lighting has potential to impact adjacent habitat the use of low-level and hooded lighting will be considered. All lighting proposals for the Site should be reviewed at an appropriate stage by a suitably qualified ecologist.
- Where it is unavoidable that habitat of nature conservation interest is lost to development, consideration will be given to its replacement elsewhere within the Site. Where this is not possible, proposals will seek to mitigate loss through provision of alternative habitats of comparable nature conservation interest or higher. It is anticipated that a selection of the following habitats may be included within the Proposed Development: species-rich meadow grasslands; rough tussocky grassland; species-rich hedgerows; species-rich scrub; woodland and treelines; orchards; and wetlands including ponds, ephemeral pools, ditches, swales and reedbeds.
- Provision of replacement areas of habitat will also give consideration to the maintenance of opportunities for wildlife movement within and adjacent to the Site. All new planting will, where appropriate, use native species, typical of the local area. Planting stock will be of local provenance wherever possible.
- All new and retained habitats of nature conservation interest will be subject to long-term management to maximise their value to wildlife.
- To avoid impacts on water quality any works in close proximity to the streams and rivers associated with the Site will follow the Environment Agency Pollution Prevention Guidance (**Ref. 7.19**).

### Legally Protected Species

7.6.2. Legally protected species are considered as follows:

#### Bats

- Development proposals will aim to avoid effects on confirmed bat roosts, however where effects on these features are unavoidable, a Natural England derogation licence will be obtained in order to permit development works affecting bats;

- Opportunities for roosting bats will be maintained through the provision of replacement and additional new roosting opportunities in buildings and trees at suitable locations across the Site. These may include a selection of bat boxes and internal cavities/voids within buildings;
- Measures to maintain existing identified bat commuting routes will be included within the proposals including retention of selected hedgerows, treelines, woodland edges and watercourse corridors and the use of sensitive lighting in these areas; and
- Loss of foraging habitat will be compensated through the habitat creation and enhancement measures listed above, maximising the value of these habitats for invertebrate prey.

[REDACTED]

- [REDACTED]
- [REDACTED]

#### **Breeding and Wintering Birds:**

- Any vegetation clearance/building demolition with potential to affect nesting birds will be undertaken outside of the bird nesting season unless carried out under the supervision of a suitably qualified ecologist;
- In order to mitigate the impact of the Proposed Development on farmland birds, open grassland and scrub edge habitats will be provided where possible within the Site.
- Measures to increase the value of newly created and retained habitats for birds at the Site will include the creation and enhancement of retained linear habitats and habitats such as woodland, scrub, trees, wet grassland, watercourses and ponds; and
- New opportunities for nesting birds will be provided across the Site through installation of a variety of bird boxes suitable for a range of bird species on buildings and trees.

#### **Reptiles:**

- A full reptile translocation exercise is not currently proposed in view of the small number and limited distribution of reptiles recorded at the Site. Instead, it is proposed that where it is not possible to retain habitat in which reptiles have been recorded, a controlled approach to vegetation clearance is carried out in these areas in order to displace any reptiles present into retained areas of contiguous habitat; and
- Development proposals will maintain and where possible enhance opportunities for reptiles at the Site through the retention, enhancement and creation of reptile habitats such as rough and meadow grassland, scrub and wetlands as part of the landscape strategy.

#### **Great Crested Newts:**

- For site clearance and construction works within 250m of any identified off-site waterbodies supporting Great Crested Newts, measures will be employed to ensure the favourable

conservation status of the local Great Crested Newt population is maintained and where necessary, covered under an appropriate Natural England license; and

- Opportunities for Great Crested Newts will be maintained within the Proposed Development through a selection of measures such as creation and management of new wetland features and terrestrial habitats such as scrub, hedgerows, rough and meadow grassland and provision of features such as log piles and purpose-built hibernacula.

#### **Invertebrates**

- The Proposed Development will aim to retain and enhance the identified key habitats for invertebrates within the Site such as woodland, hedgerows and mature trees; and
- The Proposed Development provides opportunity to enhance and create new habitats of value for invertebrates across the Site such as species-rich rough and meadow grassland, new woodland, hedgerows, scattered trees, scrub and wetlands.

## **7.7 OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT**

- 7.7.1. The landscape scheme for the Proposed Development will provide opportunity to create new habitats of wildlife value such as wetland, meadow grasslands and native shrub, tree and hedgerow planting, and enhance existing habitats through improved management. Where possible habitat creation works will be positioned to complement existing habitats both within and adjacent to the Site and to improve habitat linkages around the Site and wider area.
- 7.7.2. In addition, provision of individual features such as bat boxes, bird boxes and habitat piles will be included in order to create new opportunities for species of nature conservation interest such as bats, birds, reptiles, amphibians and invertebrates.

## **7.8 LIMITATIONS AND ASSUMPTIONS**

- 7.8.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- As discussed above, work to update several of the specialist ecological surveys is ongoing. Pending the results of these surveys, the conclusions drawn above on the status of the ecological receptors of the Site should be taken as provisional. Notwithstanding this, the extent and character of habitats within the site has not significantly changed since the 2021/2022 survey work was undertaken and it is not expected the status of protected and notable species surveys will have changed substantially in the intervening period.
  - The anticipated effects of the Proposed Development summarised above are based on the survey work to hand, the emerging masterplan and current knowledge of the programme of construction within the Site. It has been assumed that access routes and compound areas will be within the Site and where possible will use proposed development areas or existing areas of negligible nature conservation interest.

## 8 LANDSCAPE AND VISUAL

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### 8.1 INTRODUCTION

- 8.1.1. The Landscape and Visual Impact Assessment (LVIA) will evaluate the physical and visual effects of the Proposed Development at Land West of Southwater. Landscape and visual impacts will be assessed separately, with supporting details provided in **Appendix 8.1**. **Appendix 8.2** details the legislation, policy and guidance used to inform the methodology.
- 8.1.2. See Section **3.2 of Chapter 3** for information on consultation.

### 8.2 STUDY AREA

- 8.2.1. A desktop survey carried out as part of the baseline LVIA included the review of Ordnance Survey maps, interactive maps, aerial photography, published landscape character assessment documents, planning policy and the emerging development proposals. The extent of the baseline / study area and therefore the impact appraisal is broadly defined by the Zone of Theoretical Visibility (ZTV) as determined by the initial desk study and verified in the field and therefore extends to 4km from the Site (**Ref 8.1**).
- 8.2.2. The Site lies on the western edge of Southwater. It is not subject to a landscape designation at the national or regional level and nor does it lie in a strategic viewing corridor protected by policy

### 8.3 BASELINE CONDITIONS

- 8.3.1. The Site comprises the main parcel, adjacent to Southwater's western settlement edge; and a smaller parcel to the east of Christ Hospital Station - referred to as the 'Car Park Site'.
- 8.3.2. The Site is not subject to a landscape designation at the national or regional level and nor does it lie in a strategic viewing corridor protected by policy. The Site is identified as an allocated Site within the emerging Horsham District Local Plan 2023 - 2040 (Regulation 19). Refer to Policy: HA3 Land North West of Southwater (**Ref. 8.2**).
- 8.3.3. Ancient Woodland is located within the east and west of the Site - at Smiths Copse and Courtland Wood (**Ref 8.3**). Other areas of Ancient Woodland are found within the study area, beyond the settlement edges. Priority Habitat is scattered across the Study Area (**Ref 8.4**). Southwater Country Park lies to the southeast of the Site and Sedgwick Registered Park and Garden lies to the east.
- 8.3.4. Listed Buildings, are scattered across the local landscape, following road corridors, within settlements. Notable Listed buildings (**Ref 8.5**) within immediate and proximity to the Site are detailed in **Chapter 6, Cultural Heritage**.
- 8.3.5. There is a dense network of Public Rights of Way (PRoW) within and around Southwater, connecting the settlement and the Site to the more rural areas.

#### LANDSCAPE RECEPTORS

##### National Landscape Character Area (LCA) 121 'Low Weald'

- 8.3.6. At National level the Site forms part of the Landscape Character Area (LCA) 121 'Low Weald' (**Ref 8.6**).

8.3.7. The opportunities and landscape changes identified in the assessment pertinent to the Site are set out below.

- *'Protect, manage and significantly enhance the area's intricate and characteristic mix of semi-natural ancient woodlands, gill woodland, shaws, small field copses, hedgerows and individual trees to reduce habitat fragmentation and benefit biodiversity, while seeking to improve and encourage access for health and wellbeing and reinforce sense of local identity;*
- *Restore degraded neutral grasslands to buffer sites and encourage pollinators and predators for pest regulation;*
- *Plan for the creation of high-quality blue and green space and green corridors to provide a framework for new and existing development in urban areas and along major transport routes for the enjoyment and wellbeing of communities and to enhance biodiversity.'*

#### **County Landscape Character Area (LCA) H1 'Central Low Weald'**

8.3.8. The Site forms part of the West Sussex LCA H1 'Central Low Weald'. The key Characteristics are as follows (**Ref 8.7**):

- 'Gently undulating landform.
- Pasture fields, enclosed by woodlands, shaws and hedgerows.
- Some larger arable fields.
- Dense cover of ancient broadleaved woodlands and conifer plantations.
- Small stream valleys draining to the Adur and the Arun.
- Some large country houses and parkland.
- Green lanes..
- Many scattered, traditional Wealden farmsteads and cottages and a few linear villages.
- Crossed by major transport links north south, both road and rail.'

#### **District Landscape Character Area (LCA) H1 'Southwater and Christ's Hospital Farmlands'**

8.3.9. At the district level, the Site forms part of the LCA H1 'Southwater and Christ's Hospital Farmlands' (**Ref 8.8**).

8.3.10. The key characteristics are as follows:

- *"Low ridge and Plateau, with prominent rounded knoll of Sharpenhurst Hill;*
- *Large open character;*
- *Relatively few woodlands and hedgerows;*
- *Lanes with wide grass verges;*
- *Extensive open views; and*
- *Imposing brick buildings of Christs Hospital School set in parkland surroundings."*

#### **Contextual Landscape Character of the Study Area**

8.3.11. Southwater and the Site lie on a relatively low lying gently undulating plateau. The landscape at the northern edge of the study area is characterised by the Arun Valley, along the southern edge of

which the landform rises to form a wooded ridge at around 100m AOD at Denne Park. To the south of this the topography generally dips away gently to the south-west.

- 8.3.12. Towards the central-western part of the study area the landform levels out to become essentially flat, before falling away to the south. In the north-west of the study area, in the area to the north of Christ's Hospital, the topography is more undulating with several narrow stream valleys that run into the River Arun. Southwater and the Site is located on some of the flatter central area but also some of the falling ground to the south as well as an area of slightly raised landform to the south of the Southwater Country Park.
- 8.3.13. Woodland forms a prominent skyline feature in many parts of the Study Area whilst providing a sense of enclosure. Streets within the town are tree lined, and the character of open spaces are influenced by tree groups and woodland. Beyond the settlement, woodland blocks connected by hedgerow are typically regular in shape and large in scale. Tree lines are associated with golf courses, with agricultural fields typically framed by treed hedgerows.
- 8.3.14. The Study Area comprises largely a pattern of small to medium scale fields of mixed arable/pasture agricultural use with areas of small, regular fields of Medieval origin.
- 8.3.15. Several settlements sit within this rural landscape, including Southwater plus Horsham and the smaller villages of Christ Hospital, Itchingfield, Barns Green, Brooks Green and Copsale. Residential, commercial and retail areas are associated with Southwater. Parks within the village include Southwater Country Park. Beyond the settlement edges, farmland is prevalent, interspersed with woodland, golf courses and Christs Hospital School (to the northwest).
- 8.3.16. The settlement pattern of Southwater is linear in form, originally following Worthing Road, with development predominately expanding to the east, bounded by the A24. The settlement edges are in some places framed by woodland whilst in other locations, abrupt with back gardens facing onto the surrounding landscape. Woodland and trees are a key feature of the overall townscape - at settlement edges and within public open spaces.
- 8.3.17. Beyond Southwater, the settlement pattern of smaller villages is typically ribboned in form, following road corridors.
- 8.3.18. Building heights are principally two - three storey. Building heights vary more in the centre of the settlement, newly developed housing schemes and at Christs Hospital School.
- 8.3.19. The Study Area includes several historic buildings and sites that influence landscape character. Denne Park includes a few buildings, including the main house, Listed Grade II. Christs Hospital is a prominent landmark of the local area, set in a parkland setting (not registered) and where the school and chapel are both Listed Grade II\*. The area is also characterised by scattered listed farmhouses, generally 16th Century of timber frame construction and characteristic of the Low Weald.
- 8.3.20. The Study Area is broadly representative of the character area within which it sits. It has some areas of recreation and conservation value with areas of public open space, with the skyline often defined by trees. There are some areas designated for their ecological and heritage importance.

### **Landscape Character of the Site and its Setting**

- 8.3.21. The characteristics and features of the Site, defined by Fabrik, are as follows:

- Ancient Woodland at Smiths Copse and Courtland Wood, located within the southern section of the Site. The woodland is a prominent feature and contributes towards a treed skyline and rural character to the Site;
- The Site lies within the setting of a notable Grade II\* Listed building – Great House Farmhouse, which lies within the centre of the Site (outside the red line). It is anticipated that there are views from the Listed building out over the Site as well as there being views from within the Southern sections of the Site towards the Listed Building;
- The primary landscape features which contribute towards a wooded countryside and edge of settlement character, in addition to the Ancient Woodland include: the gently undulating landform; mature hedgerows, hedgerow trees, and treebelts; areas of woodland cover; individual trees within fields;
- Public Rights of Way cross the Site, typically west to east with open views of the agricultural fields, with a wooded skyline to the west and south, and an edge of settlement character to the east. The long-distance route of ‘The Downs Way’ has an enclosed character and follows the old railway line within the south of the Site, connecting the village of Southwater with the rural landscape to the west. Views out of the Site are predominantly limited to those field parcels in the southwest and north, where the distant treed horizon is appreciated to the west and southwest;
- There are locations within the northeast and centre-east of the Site where the Grade II\* Listed Dining Hall and Water Tower at Christs Hospital School and other taller buildings are apparent.

### **Site and Setting Landform and Drainage**

- 8.3.22. The Site is characterised by a gently undulating plateau landscape that is reflected on Site. The southern section is relatively low in landform and falls to approximately 50m AOD, following a small watercourse - Two Mile Ash Gill. This Gill is a small stream that flows in a southerly direction through the western part of the Site. Ditches also cross the Site in the south to Two Mile Ash Gill, which flows into the River Adur to the south of the Site (outside the Red Line Boundary).
- 8.3.23. The Site rises to a high point within Courtland Wood at approximately 61m AOD, before falling towards the central and northern section of the Site, to the Dairy Farm and northern edges of the Northern Section to approximately 40m AOD.
- 8.3.24. The land rises to the northeast, towards the A24, which is the highest level at approximately 63m AOD.
- 8.3.25. Within the Car Park Site the landform gently undulates towards the west, with the highest point between 45-50m AOD to the southeast.

### **Site and Setting Vegetation Cover**

- 8.3.26. Woodland comprises ancient and semi natural broad leaf and early mature woodland.
- 8.3.27. Hedgerows are species rich and generally intact and have regular mature hedgerow trees. Oak and ash trees are common within the Site and there are some scattered field trees, mainly within the southern and central section of the Site.
- 8.3.28. Within the Car Park Site, hedgerows mark the field boundaries and there are again, notable trees scattered along the Site boundary.

### Site and Setting Land Use

- 8.3.29. The Site predominately comprises a series of agricultural fields used for pasture and arable, bordered by woodland, hedgerows, treelines and fences. A strong network of PRowS cross the Site mainly east to west, linking the Site to the wider landscape and Southwater. A notable bridleway within the southern section is the Downs Link Long Distant Route, which crosses the Site on an east-west alignment, connecting to the West Sussex Literary Trail, beyond the Site to the west. In addition, informal routes through Courtland Wood (designated as Ancient Woodland) connect with the formal alignment of the PRow that crosses through the wood. These routes are apparent on historic maps.
- 8.3.30. Land uses within immediate proximity to the east include residential – as associated with the existing settlement edge, plus recreational with sports and play facilities close to the southeastern boundary.

### Site Function

- 8.3.31. The current agricultural land use of the southeastern part of the Site informs the rural setting to the Grade II\* listed building – Great House Farmhouse and Grade II listed building - College Farmhouse. In addition, the fields within the west of the Site form part of the rural setting to the Grade II listed buildings; Sayers Farmhouse; Barn to north west of Sayers Farmhouse; Bodimans; Lanaways Barn; Lanaways Farmhouse; Sluett's; East Lodge and Gateway, Christs Hospital School; Old Lodge to north east of Christs Hospital; Grade II\* Listed Arts Centre and Music School At Christs Hospital; and Dining Hall and Water Tower at Christs Hospital.

### VISUAL RECEPTORS

#### **Walkers within proximity using bridleway SOW-1662, bridleway SOW-3568 (the Downs Link), footpath SOW-1660, footpath SOW-1658, footpath SOW-1656 and footpath SOW-1655 and footpath SOW- 1628-3 through the Car Park Site and the main areas of the Site**

- 8.3.32. Here the public footpaths travel through the Site, predominately on an east - west alignment, through and in between field parcels connecting the Site to the western edge of Southwater and the landscape beyond to the west of the Site. The trees, woodland (including Ancient Woodland) and fields on Site inform the character and amenity of views. Refer to **Appendix 8.1, Figure 2.2** and viewpoints G, H, I, J, T, M, N, O, P, Q, 2, 6, 10, 15, 17, 20, 22.

#### **Walkers within the local landscape from PRow ITC-1651 to the west of the Site**

- 8.3.33. Walkers experience partial views of the western boundary vegetation and internal woodland / hedgerow within the west of the Site. The visible vegetation within the Site contributes towards a well treed and verdant mid-ground, with the South Downs National Park ridgeline in forming the skyline to the southeast, which intern informs the character of the view. Refer to **Appendix 8.1, Figure 2.3** and viewpoint 24.

#### **Transient users of Christs Hospital Station and carpark to the west of the Car Park Site**

- 8.3.34. As you travel in and out of the station and its carpark southwards, there are open views of the boundary vegetation, mature trees, vegetation and open grassland within the Site. Refer to **Appendix 8.1, Figure 2.2** and viewpoint 1.

### **Transient users of Two Mile Ash Road to the west of the Site**

- 8.3.35. Due to the irregular openings in the hedgerow along Two Mile Ash Road, there are a combination of open - truncated views as the receptor travels along the road corridor north-south. Those open views predominantly comprise boundary hedgerow vegetation and small areas of the western internal field parcels. The boundary hedgerow informs the character of this transient view. Refer to **Appendix 8.1, Figure 2.2** and viewpoints 4, 5, 6, 8, 9 and 10.

### **Transient users of Worthing Road, Chessall Avenue and the roundabout junction to the A24 from Worthing Road, to the east of the Site**

- 8.3.36. As you travel along Worthing Road, views are open to various sections of the Site, with different degrees of openness depending where the receptor is located along the road corridor. Again, those open views predominantly comprise boundary hedgerow vegetation and small areas of internal trees and field parcels within the eastern sections of the Site, where they rise and lie in between the boundary hedgerow. To the north of Worthing Road, beside roundabout junction to the A24. There are open views of the northern field parcels of the Northern section of the Site. The mature hedgerow and trees within the Site, as well as the large scale agricultural buildings informs the character of the view.

### **Transient users of Marlpost Road and Church Lane, to the south of the Site.**

- 8.3.37. Partial views of the Site occur from various segments along Marlpost Road and Church Lane, where there are views of the southeastern Site boundary vegetation in between the roadside vegetation. The Site boundary vegetation contributes towards a wooded character of the view.

### **Those in homes immediately adjacent to the Site**

- 8.3.38. Open and partial views of the field parcels and woodland within the Site are experienced from the rear elevations and gardens of those residents at Worthing Road, Chessall Avenue, Fletchers, Allendale, New Road, Two Mile Ash and Church Lane. These residential receptors lie immediately adjacent to and within proximity to the Site's eastern and western boundary, where the wooded character and internal field parcels, with a verdant skyline informs the character of the view. Refer to **Appendix 8.1, Figure 2.2** and viewpoints A, B, H, I, J, K, M, P, R, S, T, 8, 9, 10, 14, 17, 18, 19, 20, 21, 22.

### **Those at Grade II\* Listed Great House Farmhouse**

- 8.3.39. Open views of part of the Site's southern / central field parcels are experienced from the southwestern and northern elevation of Great House Farmhouse. Some hedgerow vegetation frames the residential curtilage of Great House Farmhouse, with views experienced above / beyond this boundary and in which the agricultural land use, and woodland informs the character and amenity of views. Refer to **Appendix 8.1, Figure 2.2** and viewpoint O.

### **Those at Grade II Listed College Farmhouse**

- 8.3.40. Glimpsed views of part of the Site's southwestern field parcels are anticipated to be experienced from eastern elevations of College Farmhouse. Mature Hedgerow frames the residential curtilage of the farmhouse, which in turn filters views beyond this boundary. Refer to **Appendix 8.1, Figure 2.2** and viewpoint 16.

## Those at Grade II Listed Holey Innocents Church and Christs Hospital School

- 8.3.41. From both these locations there are partial views of the Site's boundary vegetation (southeastern boundary vegetation from Holey Innocents Church; and western boundary vegetation from Christs Hospital School), filtered by layers of intervening vegetation. The Site boundary vegetation creates a wooded skyline and character to these views. Refer to **Appendix 8.1, Figure 2.2** and viewpoint 7 and 14.

## 8.4 PROPOSED ASSESSMENT METHODOLOGY/SCOPE OF ASSESSMENT

- 8.4.1. Information on legislation and policy, and approach to the assessment is explained in **Appendix 8.1**.

### BASELINE DATA COLLECTION

- 8.4.2. A preliminary desk study was undertaken to establish the physical components of the local landscape and to identify the broad Zone of Theoretical Visibility (ZTV) associated with the Site and therefore the boundaries to the Study Area. The ZTV was determined by digital mapping taking account of existing landform and based on assumed development parameters of up to 4 storeys high (15m), as worst case, based on the emerging masterplan. It has been assumed that:
- Woodland on Site and within the surrounds are to be retained;
  - Existing buildings at a generic 9m height; and
  - Existing woodland is modelled at a generic 15m height.
- 8.4.3. Refer to **Figure 2.1** of **Appendix 8.1** for the ZTV plan. Ordnance Survey (OS) maps and digital data have been utilised to identify local features relating to topography, drainage patterns, land use, existing settlement patterns, movement corridors and historic landscape features. In addition, aerial photography was used to supplement the OS information. This data informed the field survey by providing a basis for mapping the landscape features.
- 8.4.4. A review of the landscape related designations (including ecological and heritage designations); features of landscape importance; landscape character (at the national, county and district levels); and the definitive rights of way network has been carried out. Landscape planning policy objectives and design guidance, likely to influence the design of the proposal, have been identified.
- 8.4.5. During the desk-based assessment a series of representative viewpoints, from a range of receptors, were identified for verification in the field. These were determined through an analysis of the ZTV. The selection of viewpoints provides a range of representative, specific, illustrative or static / kinetic / sequential / transient viewpoints through and around all sides of the Site and from the different groups of people who may experience views of the Site and the Proposed Development. The views include individual or groups of dwellings, roads, pavements and PRowS, areas of open space, places of worship and education. The representative viewpoints are shown in **Appendix 8.1**.
- 8.4.6. The sources of baseline data included:
- Google and Bing maps for aerial photography;
  - Natural England (for national level landscape character);
  - West Sussex County Council (for definitive rights of way and county level landscape character assessment);

- Horsham District Council (for landscape related designations, district level landscape character); and
- [magic.gov.uk](http://magic.gov.uk) (for ecological and heritage designations).

## PROPOSED ASSESSMENT METHODOLOGY

8.4.7. The methodology for the LVIA ES Chapter will be drawn from GLVIA. The full LVIA methodology to be adopted is set out in **Appendix 8.1**.

## 8.5 DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

8.5.1. The following section identifies the proposals that are likely to result in significant effects (both adverse and beneficial) and therefore are to be scoped into the LVIA.

### Construction Impacts and Effects

8.5.2. At the construction stage, effects on landscape receptors will be predominantly limited to the Site level landscape receptors. This stage will see the commencement of the change from a greenfield site to that of a construction site. It is anticipated that significant effects may occur for the following Site level receptors:

- Landform and drainage – as a result of the change in the Site’s natural landform to facilitate the Proposed Development platforms and any attenuation features;
- Vegetation cover– due to the removal of a hedgerow and trees to facilitate construction access and connecting routes through the Proposed Development;
- Land use – due to the wholesale change to that of a construction site, whilst temporary, sees the commencement of a permanent change;
- Function – due to the adverse effects on the Site’s role in contributing to the setting of Grade II\* Listed Great House Farmhouse resulting from the wholesale change to a construction site; and
- Landscape character – due to the changes principally in land use of the Site and increased activity with the Site.

8.5.3. In terms of effects on visual receptors, due to the combination of topography, vegetation and built form, the effects during the construction phase will be limited to those receptors which currently experience views of the Site. It is considered that likely significant effects may arise in relation to the following:

- Residents at the western edge of Southwater
- People engaged in outdoor activities in public open space on the western edge of Southwater;
- Residents, including those living at Grade II Listed dwellings, those visiting the Bax Castle Pub to the east of the Site along Worthing Road and those dwellings along Worthing Road and Two Mile Ash.
- Residents at the Grade II\* Listed Great House Farmhouse
- Residents at Grade II College Farmhouse, to the immediate southeast of the Site;
- Transient receptors using the PRow within immediate proximity and within the Site;
- Transient receptors travelling along Worthing Road;

- Transient receptors at Christs Hospital Station;

8.5.4. In addition to best practices regarding the retention and protection of existing trees, the minimisation of light spill and upward glare and the CEMP, during the construction phase, the following are to be considered:

- The location of the contractor's compound;
- The selection of a visually recessive colour for the contractor's cabin(s);
- The use of either solid hoardings or transparent security fencing; and
- The minimisation of the height of stockpiled materials.

### **Occupation Impacts and Effects**

8.5.5. Once the Proposed Development is completed, it is anticipated that significant adverse effects may occur for the following receptors:

- Land use of the Site – due to the wholesale change to that of new homes, school, local centre and open space;
- Landscape character at the Site level – due again to the wholesale change to that of new homes, school, local centre and open space;
- Transient receptors using the PRow within immediate proximity and within the Site;
- Residents and people engaged in outdoor activities in the public open space on the western edge of Southwater;
- Residents at Grade II\* Listed Great House Farmhouse; and
- Transient receptors travelling along Worthing Road

8.5.6. Beneficial effects are predicted to occur on the existing tree and hedgerow stock of the Site, due to the provision of a significant area of retained green infrastructure which can accommodate a range of new planting.

### **Elements proposed to scope out**

8.5.7. Those receptors proposed to be scoped out of the assessment include effects on:

- The landscape receptors beyond the Site, as no physical changes are proposed beyond the red line boundary;
- Landscape character at the national level, considering the scale and extent of the proposals and relationship with the existing and emerging settlement edge;
- Those receptors where views of the Site are wholly obscured by existing intervening built form, topography or vegetation which is proposed to be retained, or a combination of these;
- Effects on construction workers, as temporary receptors.

## **8.6 MITIGATION**

8.6.1. At the operational phase, it is predicted at this stage that no additional mitigation measures are proposed over and above those designed and embedded into the scheme, which are likely to include the retention and reinforcement of the existing landscape framework, the provision of public open

space, and areas of mitigation planting to integrate the Proposed Development into the wider landscape.

## 8.7 OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

### CHARACTER

8.7.1. The treed character of the Site can be retained, protected and enhanced, as per published landscape character recommendations (in LCA H1 Southwater and Christ's Hospital Farmlands) and as consistent with the site's treed setting. As such the following opportunities could be incorporated:

- Buffers, in excess of Natural England's recommended guidance where possible should be provided for retained Ancient Woodland – with positive management strategies set out;
- Provision of woodland edge eco-tones to Ancient Woodland edges, with positive interface and frontage to development parcels;
- Existing mature hedgerows and trees are to be retained and protected with a 10m offset from built form (as a guide);
- Tree removals to facilitate access to development parcels should be limited and additional planting should be incorporated into the landscape strategy to reinforce the treed character of the Site, bolster the existing treed skyline - thus reducing the presence of built development in views from the surroundings;
- Incorporate new woodland, trees and restore former hedgerows, within the open space and street scene to reinforce the treed character and provide a robust integrated green and blue infrastructure strategy that is responsive to local landscape character;
- The Proposed Development should respond to the historic settlement pattern of Southwater, local designs and materials;
- Residential parcels should be offset from existing retained vegetation and root protection areas respected as determined by the arboricultural survey;
- Building heights should be appropriate to the village fringe location;
- Areas of public open space are to be well related to the existing landscape features and PRoW. The quantum of open space to be provided is to be in accordance with policy requirements;
- Sports strategy to be developed in consideration of adjacent existing provision and the rural context;
- The existing network of PRoW is to be enhanced with interconnecting routes to provide off-road circuitous routes, within the open space network.

### VIEWS

- Retain verdant views from the PRoW that cross the Site, by incorporating a generous green setting to the routes. – Particularly for the Downs Link, as referenced in the Reg 19 draft policy wording: *"The tranquil character and the setting of the Downs Link should be preserved."*;
- Incorporate viewing corridors through the proposals to key features of the Site and local landmarks at Christ Hospital School;

- Retain verdant views from the Grade II\* Listed Great Farmhouse, particularly from the front and rear elevations.

## 8.8 LIMITATIONS AND ASSUMPTIONS

8.8.1. The following assumptions will be made in relation to the assessment of effects:

- The assessment baseline year is 2025;
- Existing vegetation will continue to grow at rates typical of its location, species and maturity;
- For the visual assessment from residential properties, transport corridors and public rights of way, the receptor is a standing adult with an eye height of 1.60m;
- Visual effects are based on good visibility. Visual effects can be expected to vary, with poor visibility at times of low cloud, rainfall and at dusk. At these times a reduction in visual clarity, colour and contrast will be experienced;
- Reduced visibility will limit the extent of views, particularly long-distance views. Therefore, the assessment of effects will present a worst-case scenario, when the Proposed Development will be most visible;
- The assessment is based on publicly accessible locations. Professional judgement is used to determine the likely effects from private properties;
- All existing vegetation (hedges and trees) outside the Site boundary will be retained and protected during the construction phase;
- Construction operations would be short term.

## 9 NOISE AND VIBRATION

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### 9.1 CONSULTATION

9.1.1. See Section 3.2 of Chapter 3 for information on consultation.

### 9.2 STUDY AREA

#### CONSTRUCTION NOISE

9.2.1. The proposed study area for construction noise impacts is 300m from on-site construction activities. British Standard 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (Ref. 9.1)* states that at distances beyond 300m, other factors, such as meteorological conditions have increasing influence and construction noise level predictions are considered less robust.

#### CONSTRUCTION VIBRATION

9.2.2. The proposed study area for construction vibration impacts is 100m from on-site construction activities based on guidance contained within British Standard 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration (Ref. 9.1)*.

#### OPERATIONAL STAGE

##### Development Generated Road Traffic Noise – Wider Road Network

9.2.3. The assessment of development generated road traffic noise on the wider road network will focus on changes in noise levels associated with each individual road link, rather than at specific receptors. The Design Manual for Roads and Bridges (DMRB) LA 111 Noise and vibration (2020) (Ref. 9.2), advises that noise level changes should be considered at receptors within 50m of the kerb of wider network roads. A study area of 50m from each wider network link will therefore be adopted for this assessment.

##### Development Generated Road Traffic Noise – Access Roads

- It is proposed to undertake an assessment of noise level from vehicles using the proposed new access roads based on guidance contained within DMRB LA 111 (Ref. 9.2). The assessment will be proportionate and will not constitute a full DMRB assessment. The study area for this assessment will be limited to those receptors (either future receptors within the Proposed Development, or existing receptors) closest to the new access roads.

### 9.3 BASELINE CONDITIONS

9.3.1. Attended and unattended baseline noise surveys were undertaken between March 2022 and May 2022 at various locations representative of nearby and future receptors to provide an understanding of the baseline noise climate.

9.3.2. The measurement positions (MP) are shown in **Figure 9.1 of Appendix 9.1**.

9.3.3. The existing baseline noise climate of the main area of the site is predominantly dominated by road traffic from the A24 to the north and surrounding local roads including, Worthing Road to the east, Bonfire Hill and Church Lane to the south and Two Mile Ash Road and Marlpost Road to the west.

- 9.3.4. The baseline noise climate on the smaller area of the site at Christs Hospital is anticipated to be dominated by rail noise from the west and road traffic noise from the A24 to the north.
- 9.3.5. There are understood to be no significant sources of vibration within the vicinity of the Site which could affect the Proposed Development.
- 9.3.6. It is considered that the baseline noise climate is unlikely to have materially changed since the 2022 noise survey and therefore, the data captured in 2022 is proposed to be used for the noise assessment to be amended in the ES. In any case, as noise levels affecting the site will be quantified using traffic data for the surrounding roads, any increase in traffic flows since 2022 will be captured through the noise modelling that will be undertaken to inform the ES.

**SENSITIVE RECEPTORS**

- 9.3.7. The following sensitive receptor groups have been identified using online satellite imagery:
  - Residential properties to the east of the main site in Southwater on Worthing Road and surrounding minor roads;
  - Isolated residential properties surrounding Great House Farm at the south east of the main site;
  - Isolated residential properties to the south of the main site off Bonfire Hill;
  - Isolated residential properties to the west of the main site off Two Mile Ash Road and Marlpost Road, and
  - Residential properties to the south and west of the smaller area of the site at Christs Hospital.
- 9.3.8. Where the assessments in the noise and vibration ES chapter require receptor specific noise level predictions (construction noise and Spine Road traffic noise assessments), sample receptors will be used which are representative of other nearby receptors. These receptors have been chosen as they are potentially the most affected by construction and operational phase impacts associated with the Proposed Development. Where impacts are predicted at these receptors, similar impacts should also be considered likely to occur at receptors within the immediate vicinity. The sample residential receptors used in this assessment are as follows and shown in **Figure 9.2 of Appendix 9.1**:
  - Pilfolds
  - New Road
  - Fletchers
  - Chessall Avenue
  - Great House Farm
  - Oakwood House
  - Bodimans
  - Lanaways Barn
- 9.3.9. All noise and vibration sensitive receptors are considered to be of high sensitivity. For the purpose of the noise and vibration assessment, there will be a direct relationship between the magnitude of impact and scale of effect. This is set out in **Table 9-1** below.

**Table 9-1 - Relationship between magnitude of impact and scale of effect**

Magnitude of Impact	Scale of Effect
Negligible	Negligible

Small	Minor
Medium	Moderate
Large	Major

## 9.4 PROPOSED ASSESSMENT METHODOLOGY

### ELEMENTS SCOPED IN TO THE ASSESSMENT

9.4.1. The following sections set out the proposed assessment methodology for those aspects scoped-in to the Noise and Vibration ES chapter.

#### Construction Stage

#### Construction Noise

9.4.2. Calculations will be undertaken to predict the likely magnitude of noise impacts at the nearest sensitive receptors during the key work stages, based on construction phasing information and equipment lists agreed with the project team. The information anticipated to be required for the assessment will be:

- Key construction phasing plans, including activities; and
- Quantities, locations, sound power data (dB,  $L_w$ ), and operating times (%) for the key plant items for each work phase and activity.

9.4.3. The construction noise predictions will follow the methodology in BS 5228-1 (Ref. 9.1).

9.4.4. The significance of the predicted noise levels will be determined in accordance with BS 5228-1 (Ref. 9.1). The assessment will utilise the ABC method detailed in Annex E of BS 5228-1 (Ref. 9.1), which identifies potential significance depending on whether a threshold level determined based on the ambient noise level is exceeded (reproduced in Table 9-2 below). As required by BS 5228-1 (Ref. 9.1), the assessment of significance will also consider other factors, such as the sensitivity of receptors affected, the hours of works, the duration and character of the impact.

**Table 9-2 – Threshold of potential significant effect at the façade of dwellings (from BS 5228-1)**

Assessment category and threshold value period	Threshold value, in decibels (dB, $L_{Aeq,T}$ )		
	Category A <sup>A)</sup>	Category B <sup>B)</sup>	Category C <sup>C)</sup>
Night-time (23:00 –07:00)	45	50	55
Evenings and weekends <sup>D)</sup>	55	60	65
Daytime (07:00 –19:00) and Saturdays (07:00–13:00)	65	70	75

NOTE 1 - A potential significant effect is indicated if the  $L_{Aeq,T}$  noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level.

NOTE 2 - If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total  $L_{Aeq,T}$  noise level for the period increases by more than 3 dB due to site noise.

NOTE 3 - Applied to residential receptors only.

A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

D) 19:00–23:00 weekdays, 13:00–23:00 Saturdays and 07:00–23:00 Sundays.

- 9.4.5. Given the fairly low measured baseline noise levels from the baseline monitoring surveys undertaken across the Site and surrounding area, the most stringent, Category A criteria have been considered most appropriate for this assessment in line with the approach set out within BS 5228-1 (Ref 9.1) set out above.
- 9.4.6. The magnitude of impact scale for construction noise is presented in **Table 9-3**.

**Table 9-3 – Magnitude of impact scale – construction noise**

Level of noise solely from construction works (façade levels), dB L <sub>Aeq,T</sub> (T – the time period over the core working day)	Magnitude of impact
≤59 dB	Negligible
60 dB to 64 dB	Small adverse
65 dB to 70 dB	Medium adverse
≥71 dB	Large adverse

**Construction Vibration**

9.4.7. With respect to human exposure to building vibration, Table B1 of Annex B to BS 5228-2 (Ref 9.1) provides guidance on the effects of vibration levels on human beings. This is reproduced in Table 9-4 below.

**Table 9-4 – BS 5228-2 Guidance on effects of vibration levels**

Vibration level	Effect
0.14 mm·s <sup>-1</sup>	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3 mm·s <sup>-1</sup>	Vibration might be just perceptible in residential environments.
1.0 mm·s <sup>-1</sup>	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.
10 mm·s <sup>-1</sup>	Vibration is likely to be intolerable for any more than a very brief exposure to this level.

9.4.8. The magnitude of impact scale for vibration is based on the above guidance within BS 5228-2 (Ref. 9.1). However, cautiously, a lower value than 10 mms<sup>-1</sup> has been adopted for the large magnitude of impact category based on professional experience.

**Table 9-5 – Magnitude of impact scale – construction vibration**

Peak particle velocity (PPV) $\text{mms}^{-1}$	Magnitude of impact
$\leq 0.3$	Negligible
0.4 – 0.9	Small adverse
1.0 – 4.9	Medium adverse
$\geq 5.0$	Large adverse

9.4.9. The focus of the construction assessment will be to determine whether any significant effects are likely to arise, and if so, to identify any mitigation measures to be included in a Construction Environmental Management Plan (CEMP).

### Operational Stage

#### Development Generated Road Traffic Noise – Wider Road Network

- 9.4.10. The change in noise levels resulting from additional traffic flows associated with the Proposed Development will be predicted based on traffic data provided by the project’s transport consultant, and in line with guidance contained within the Department of Transport and Welsh Office memorandum Calculation of Road Traffic Noise (1988) (Ref. 9.3). The magnitude of impact will then be assessed in general accordance with the guidance contained in DMRB LA 111 (Ref. 9.2) using the magnitude of noise impact classifications contained in that document.
- 9.4.11. A number of assessment year scenarios and comparison were undertaken (in accordance with the DMRB (Ref. 9.2) guidelines) to assess the potential effects of traffic related noise from the completed and operational Proposed Development. These are detailed below:
- Comparison 1: Year of Opening with the Proposed Development vs. year of Opening without the Proposed Development
  - Comparison 2: Forecast baseline with the Proposed Development vs forecast baseline without the Proposed Development.
  - Comparison 3: Forecast baseline with the Proposed Development including Local Plan schemes vs forecast baseline without the Proposed Development including Local Plan schemes<sup>1</sup>.
- 9.4.12. The first comparison above assesses the short-term change in traffic related noise as a result of the Proposed Development, and the second comparison assesses the long-term change in traffic related noise as a result of the Proposed Development. The purpose of the third comparison is to

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<sup>1</sup> The Local Plan schemes traffic data scenarios include background traffic growth up to 2038, as well as traffic associated with committed developments and allocated sites within the HDC Local Plan.

understand the noise level changes resulting from general traffic growth not associated with the Proposed Development.

- 9.4.13. The following magnitude of impact scale is proposed for operational road traffic noise. The significance of effect may be adjusted depending on the acoustic context, including the absolute noise level and likely perception of change by a resident, as defined in LA 111 (Ref. 9.2).

**Table 9-6 – Magnitude of impact – development generated road traffic noise (wider road network)**

Short-term change in noise level, dB(A)	Long-term change in noise level, dB(A)	Magnitude of impact
0 to +0.9	0 to +2.9	Negligible
+1.0 to +2.9	+3.0 to +4.9	Small adverse
+3.0 to +4.9	+5.0 to +9.9	Medium adverse
≥+5.0	≥+10.0	Large adverse

#### Development Generated Road Traffic Noise – Access Roads

- 9.4.14. The assessment of traffic noise from the new access roads will be undertaken based on the principles of DMRB LA 111 (Ref. 9.2), but the assessment will be proportionate and will not constitute a full DMRB assessment. The approach to the assessment is similar to noise impacts on the existing road network, however, noise level changes and absolute noise levels will be calculated at specific sample receptors, rather than adjacent to individual road links. The magnitude of impact scale for this assessment is the same as for development generated road traffic noise as presented in Table 9-6 above.

#### Noise from Christ’s Hospital Station Car Park

- 9.4.15. Additional car parking spaces are proposed as part of the Proposed Development to serve Christ’s Hospital Station.
- 9.4.16. There is no directly relevant methodology for assessment of new car parks, so cautiously BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound* has been applied in the first instance (Ref. 9.4). BS 4142 sets out a process whereby the noise rating level from the proposed noise source is compared to the existing background noise level. Following the initial estimation of impact, contextual factors should be considered which could affect the overall judgement.
- 9.4.17. The assessment will be based on anticipated vehicle numbers using the car park at key time periods.
- 9.4.18. As context is a key aspect of the BS 4142 (Ref. 9.4) assessment approach it is not appropriate to derive a magnitude of impact scale for this assessment. The overall significance of effect will be determined based on the initial estimation of impact and consideration of all pertinent contextual factors.

### Noise from Employment Land

- 9.4.19. The plot of land closest to the A24 at the north of the Site is allocated for employment uses. The proposed use classes are not yet known, nor is the orientation of any proposed buildings given the outline nature of the application.
- 9.4.20. Noise from the employment land (particularly if there are significant plant or external service yards or storage areas) could potentially lead to significant effects both at existing receptors and future receptors within the Proposed Development. The appropriate guidance for noise from employment land is BS 4142:2014+A1:2019 (**Ref. 9.4**) whereby the noise rating level from commercial/industrial noise is compared to the existing background noise level. Following the initial estimation of impact, contextual factors should be considered which could affect the overall judgement.
- 9.4.21. Once further information is available regarding the likely uses of the Site and the orientation of buildings, a detailed assessment may need to be undertaken considering the impact of noise on nearby residents (existing and future). However, at this stage without this information, only a qualitative risk-based assessment can be undertaken and therefore a magnitude of impact scale has not been adopted for this assessment.

### Noise from Sports Pitches

- 9.4.22. Several sports pitches are proposed within the Proposed Development, however, detailed layouts are not currently available.
- 9.4.23. An important consideration for sports pitches are the hours and regularity of their use. Should they be used regularly into the evening period or at the weekend there is an increased chance of disturbance to nearby residents.
- 9.4.24. As detailed plans and operating hours are not available at this stage, only a qualitative risk-based assessment can be undertaken and therefore a magnitude of impact scale has not been adopted for this assessment.

### Site Suitability Assessment

- 9.4.25. The suitability of the Site for its intended use (residential and education being the main noise sensitive uses) will be assessed in accordance with relevant national and local policy, standards and guidance.
- 9.4.26. For residential uses, the internal and external target noise criteria for residential spaces will be based on guidance within BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings* (**Ref. 9.5**) and Professional Practice Guidance (ProPG) on Planning and Noise: New Residential Development (2017) (**Ref 9.6**). These target levels have been reproduced in **Table 9-7** below.

**Table 9-7 – Target internal and external noise criteria for residential spaces**

Residential Space	Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)	
Habitable rooms (i.e. bedrooms, living and dining rooms)	35 dB L <sub>Aeq,16hr</sub>	30 dB L <sub>Aeq,8hr</sub>	45 dB L <sub>Amax</sub> (not to be exceeded more than 10 times per night)
External amenity areas	55 dB L <sub>Aeq,16hr</sub>	-	-

9.4.27. Target internal and external levels for other noise sensitive uses associated with the Proposed Development will be identified based on relevant policy, standards and guidance.

**ELEMENTS SCOPED OUT OF THE ASSESSMENT**

9.4.28. The following sections provide the justification for why these aspects are scoped-out of the Noise and Vibration ES chapter.

**Construction Stage**

**Construction Traffic Noise**

9.4.29. Noise impacts resulting from construction traffic using the existing road network have been scoped-out of this assessment. The existing roads surrounding the site, in particular the A24, are anticipated to carry a sufficient number of vehicles such that additional construction vehicles from the Proposed Development are unlikely to lead to significant adverse noise effects.

**Operational Stage**

**Existing Road Alterations**

9.4.30. It is understood that a number of existing road improvements are proposed as part of the Proposed Development, including the provision of traffic signals at the Hop Oast roundabout to the north east of the site. It is considered unlikely that these improvements would lead to significant operational road traffic adverse noise effects.

**Noise from Schools**

9.4.31. Sources of noise associated with the schools forming part of the Proposed Development will be no different to sources associated with other schools countrywide. As the exact location and orientation of the schools are not yet known, a detailed assessment cannot be undertaken at this stage. However, for the majority of the time, schools and adjacent dwellings co-exist side-by-side without any issues and it is anticipated that this will be the case here. This conclusion is reinforced when it is considered that most of the noise generated by schools occurs during the standard daytime working hours, Monday to Friday and only during term times. Therefore, it is considered that no further assessment of noise from the school and/or its playing fields affecting existing or proposed residential receptors is required at this stage.

### Noise from Fixed Building Services Plant

- 9.4.32. The extent of any fixed building services plant required as part of the Proposed Development is unknown at this stage (as is typically the case for an outline application)
- 9.4.33. It is anticipated that sufficient detail (final plant specifications and locations) will not be available to undertake a worthwhile assessment of fixed building services plant noise at this stage. Any fixed building services plant will be designed to meet plant noise emission levels set in accordance with HDC. It is anticipated that this will be conditioned.

## 9.5 DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

- 9.5.1. **Table 9-8** presents a summary of the elements scoped in or out of further assessment.
- 9.5.2. An assessment of the suitability of the Site for its proposed uses will be undertaken in line with relevant guidance and based on the results of the noise survey and baseline modelling. However, a magnitude of impact scale and significance will not be applied to this assessment. The purpose of this assessment will be to demonstrate that relevant internal and external target noise criteria can be achieved based on anticipated external noise levels.

**Table 9-8 - Type Elements Scoped In or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
On-site construction noise	Construction	✓		Potential for significant adverse noise effects from construction activities.
On-site construction vibration	Construction	✓		Potential for significant adverse vibration effects from construction activities.
Off-site construction traffic noise	Construction		✓	Given the existing volume of traffic that is anticipated on the local road network, it is considered highly unlikely that construction vehicles associated with the Proposed Development will lead to significant adverse effects. For reference, DMRB LA 111 advises that a short-term change of 3 dB or more would lead to a significant adverse effect on a road link.
Development generated road traffic noise on wider network roads	Operation	✓		Potential for significant adverse noise effects from vehicles associated with the Proposed Development using the existing wider road network.
Development generated road traffic noise on access roads	Operation	✓		Potential for significant adverse noise effects from vehicles associated with the Proposed Development using the new access roads.

Element	Phase	Scoped In	Scoped Out	Justification
Noise from Christ's Hospital Station Car Park	Operation	✓		Potential for significant adverse noise effects from vehicles using the additional car parking at Christ's Hospital Station.
Noise from employment land	Operation	✓		Where employment uses are located close to residential properties there is the potential for significant effects to occur. However, as detailed layouts are not available at this stage only a qualitative risk based assessment will be undertaken at the outline application stage.
Noise from sports pitches	Operation	✓		Where sports pitches are located close to residential properties there is the potential for significant effects to occur. However, as detailed layouts are not available at this stage only a qualitative risk based assessment will be undertaken at the outline application stage.
Road traffic noise from existing roads altered as part of the Proposed Development	Operation		✓	It is considered unlikely that the proposed alignment and traffic signalling changes to existing roads surrounding the site will lead to significant adverse effects.
Noise from fixed building services plant	Operation		✓	It is anticipated that sufficient detail (final plant specifications and locations) will not be available to undertake a worthwhile assessment of fixed building services plant noise at this stage. Any fixed building services plant will be designed to meet plant noise emission levels set in accordance with HDC. It is anticipated that this will be conditioned.
Noise from the proposed schools	Operation		✓	Sources of noise associated with the schools forming part of the Proposed Development will be no different to sources associated with other schools countrywide. As the exact location and orientation of the schools are not yet known, a detailed assessment cannot be undertaken at this stage. However, for the majority of the time, schools and adjacent dwellings co-exist side-by-side without any issues and it is anticipated that this will be the case here.

Element	Phase	Scoped In	Scoped Out	Justification
				This conclusion is reinforced when it is considered that most of the noise generated by schools occurs during the standard daytime working hours, Monday to Friday and only during term times. Therefore, it is considered that no further assessment of noise from the school and/or its playing fields affecting existing or proposed residential receptors is required at this stage.

## 9.6 MITIGATION

- 9.6.1. During the construction phase mitigation measures, such as the adoption of best practicable means (BPM), are likely to be required. BPM measures aim to reduce noise and vibration levels as far as reasonably practicable during construction works.
- 9.6.2. During the operational phase, no mitigation measures are currently anticipated to be required but this will be reviewed as the assessment progresses. Where possible the new access roads will be designed to minimise noise levels affecting existing receptors.

## 9.7 OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

- 9.7.1. At this stage, no enhancement opportunities have been identified, however, this will continue to be reviewed as the assessment is progressed.

## 9.8 LIMITATIONS AND ASSUMPTIONS

- 9.8.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
  - The construction noise and vibration assessment will be indicative as the exact plant items and construction programme are not known at this stage. However, reasonable assumptions will be made based on input from the design team and experience on similar-sized construction sites.

## 10 SOCIO-ECONOMICS

### 10.1 INTRODUCTION

- 10.1.1. This chapter outlines the scope, methodology, and baseline for assessing potential socio-economic impacts of the Proposed Development at North Southwater, which will be scoped into the EIA.
- 10.1.2. See Section 3.2 of Chapter 3 for information on consultation.

### 10.2 STUDY AREA

#### EXTENT OF THE STUDY AREA

- 10.2.1. The study area for this Socio-economic assessment varies according to receptor. In the absence of statutory guidance on socio-economic assessments, reference has been made to planning policy, best practice guidance, and both professional judgement and experience. Those socio-economic receptors, for which some specific geographical parameters can be applied in relation to the Proposed Development site, are outlined below.
- 10.2.2. **Table 10-1** outlines the different components of the assessment and the geographical scale at which they have been assessed.

**Table 10-1 - Socio-economic Study Areas and Rationale**

Effect	Study Area	Rationale for Study Area
Employment generation during the enabling and construction phase (direct, indirect, and induced effects)	Local (Horsham) County (West Sussex)	Census 2021 Origin and Destination Statistics
Employment generation during the operational phase (direct, indirect, and induced effects)	Local (Horsham) County (West Sussex)	Census 2021 Origin and Destination Statistics
Additional local spending	Local (Horsham) County (West Sussex)	Office for National Statistics Regional Statistics 2021
Provision of housing	Horsham	Horsham District Planning Framework 2015 Draft Horsham District Local Plan 2023 - 2040 (currently undergoing examination)
Provision of affordable housing	Horsham	Horsham District Planning Framework 2015 Draft Horsham District Local Plan 2023 - 2040 (currently undergoing examination)
Effect on capacity and demand for early years / nursery facilities	2km	Professional judgement and past experience

Effect	Study Area	Rationale for Study Area
Effect on capacity and demand for primary education places	Average travel to school area (4.5km)	National Travel Survey 2024 (Regional data – South East England)
Effect on capacity and demand for secondary education places	Average travel to school area (5.8km)	National Travel Survey 2024 (Regional data – South East England)
Effect on capacity and demand for primary healthcare – GP provision	5km radius	Professional judgement and past experience
Provision of open space	300m or 1km from natural and semi-natural greenspace of at least 0.05ha 480m from amenity green space of at least 0.05ha 1km from parks and gardens (guideline in size of the Site is not applicable to parks and gardens)	Horsham District Council Greenspace Strategy 2024-29 Horsham District Council Open Space, Sport & Recreation Review 2021
Provision of play space	400m from a local play area for children 1km from a local play area for young people	Horsham District Council Open Space, Sport & Recreation Review 2021 Horsham District Council Play Strategy 2017-27

10.2.3. Further detail on the rationale for the study areas used has been outlined below.

## STUDY AREA RATIONALE

### Employment Generation

10.2.4. The economic impact of the Proposed Development is considered relative to the Horsham (local) and West Sussex (county), as this represents the principal labour market catchment area. Horsham is highly accessible from all areas of West Sussex and is likely to be served by labour from all districts across the county. The West Sussex labour market incorporates the population that may reasonably be expected to travel to and benefit from the Proposed Development.

### Education

10.2.5. The existing baseline education provision relevant to the Proposed Development has been assessed taking account of guidance published by the Audit Commission (**Ref. 10.1**). In terms of the availability of education places, the Audit Commission states that “it is unrealistic and probably undesirable to aim for a perfect match at each school; a sensible approach would be to plan for a 95% occupancy rate at schools and accept some variation, say plus or minus 10% around this target” (**Ref. 10.1**).

10.2.6. There is no specific guidance on the typical distance within which nursery schools are accessed from a person’s home. On the basis of past experience, 2km is considered to be appropriate and representative of a typical distance to access early years facilities within semi-rural areas.

10.2.7. The 2023 National Travel Survey (published 2024) states that the average distance travelled to school by primary school pupils in the South East of England is 4.5km and for secondary school pupils is 5.9km (Ref. 10.2). These catchments are the areas within which children are most likely to access education facilities, in proximity to their home address. Therefore, the baseline for primary and secondary education considers all schools within 4.5km and 5.9km of the Site respectively.

**Primary Healthcare (GP services)**

10.2.8. The Site is located within the NHS West Sussex Clinical Commissioning Group (CCG) area. The CCG area is the location within which the majority of residents at the Proposed Development are likely to access GP provision.

10.2.9. There is no standardised catchment area within which residents typically access GP services. As such, a ‘typical’ walking distance for West Sussex of 5km has been assumed, on the basis of past experience and professional judgement.

**Open and Recreational Space**

10.2.10. The Horsham District Council Open Space, Sport & Recreation Review 2021 (Ref. 10.3) sets out a public open space hierarchy that provides recommended accessibility standards for access to open spaces, as outlined in Table 10-2. Therefore, the baseline considers the open spaces within these catchments from the Proposed Development site.

**Table 10-2 - Open Space Accessibility in Horsham**

Open Space Categorization	Distances from Homes to Open Spaces	Guidelines in Size of Site (Ha)
Natural and Semi-natural Greenspace	300m or 1km	At least 0.05
Amenity Greenspace	480m	At least 0.05
Parks and Gardens	1km	Not applicable

Source: Knight, Kavanagh & Page, (2021). (Ref. 10.3)

**Play Space**

10.2.11. The Horsham District Council Open Space, Sport & Recreation Review 2021 (Ref. 10.3) provides guidelines on the recommended walking distances from child play spaces, as outlined in Table 10-3. Therefore, the baseline considers the play spaces within these distances from the Proposed Development site.

**Table 10-3 - Accessibility to Play Space in Horsham**

Play space Categorization	Distance from Homes to Play Spaces	Guidelines in Size of Site (m <sup>2</sup> )
Play space for children	400m	0.5m <sup>2</sup>
Play space for young people (including skate parks, bicycle motorcross (BMX), basketball courts, youth shelters and Multi Use Games	1km	0.4m <sup>2</sup>

Area (MUGAs))		
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Source: Knight, Kavanagh & Page, (2021). (Ref. 10.3)

## 10.3 BASELINE CONDITIONS

- 10.3.1. An overview of the key existing baseline conditions are as follows and will be outlined in further detail within the Socio-economics ES Chapter.
- 10.3.2. A baseline data collection exercise has been undertaken which included a review of available information to determine the baseline conditions in the relevant geographical areas of effect. The following data sources have been reviewed:
- Office for National Statistics (ONS) NOMIS (Ref. 10.4);
  - English Indices of Deprivation 2019 (Ref. 10.5);
  - NHS Choices website (Ref. 10.6); and
  - Office for Health Improvement & Disparities – Local Authority Health Profiles (Ref. 10.7).

### POPULATION

- 10.3.3. According to Census data, in 2021 (Ref 10.8) the total population of Horsham<sup>2</sup> was 146,778 (an 11.8% increase from 131,301 in 2011). For West Sussex, the total population was 882,676 (a 9.4% increase from 806,892 in 2011).
- 10.3.4. The working age population (residents aged 16-64) as a percentage of the total resident population in Horsham, West Sussex, and Great Britain is shown in **Table 10-4**. The proportion of working age residents is broadly in line with the Great Britain averages across the district and county geographies.

**Table 10-4 - Population aged 16-64 (% of the resident population)**

Horsham	West Sussex	Great Britain
59.4%	59.5%	62.9%

Source: ONS, NOMIS (Ref. 10.8)

### EMPLOYMENT AND ECONOMIC ACTIVITY

- 10.3.5. The NOMIS Job Densities Report (Ref. 10.4), is available on a Local Authority-wide and sub-regional level and indicates the availability of employment and labour demand. As of 2023, the job density levels (i.e. the ratio of total jobs to the population aged 16-64) in Horsham was 0.84. This is lower than the West Sussex (0.86) and the Great Britain level (0.86) indicating fewer employment opportunities within the county when compared with West Sussex as a whole.

<sup>2</sup> The most recently available data at the time of writing.

10.3.6. There were estimated to be 58,000 jobs in Horsham in 2023, of which 66.2% were full-time and 32.8% part-time. **Table 10-5** shows the proportion of total employees working in each industry sector (**Ref. 10.4**).

**Table 10-5 - Proportion of total employees in each industry sector**

Industry Sector	Horsham (%)	West Sussex (%)	Great Britain (%)
B: Mining and quarrying	0.0	0.1	0.1
C: Manufacturing	6.9	7.5	7.5
D: Electricity, gas, steam and air conditioning supply	0.3	0.3	0.4
E: Water supply; sewerage, waste management and remediation activities	0.9	0.8	0.7
F: Construction	6.0	4.1	4.8
G: Wholesale and retail trade; repair of motor vehicles and motorcycles	17.2	15.4	13.7
H: Transportation and storage	2.6	7.5	5.0
I: Accommodation and food service activities	8.6	9.8	8.0
J: Information and communication	5.2	3.1	4.6
K: Financial and insurance activities	3.0	2.8	3.4
L: Real estate activities	2.6	1.8	1.9
M: Professional, scientific and technical activities	8.6	6.9	9.3
N: Administrative and support service activities	10.3	9.3	8.7
O: Public administration and defence; compulsory social security	1.6	3.1	4.7
P: Education	8.6	8.0	8.6
Q: Human health and social work activities	8.6	13.9	13.9
R: Arts, Entertainment and Recreation	3.9	3.3	2.6
S: Other service activities	3.9	2.1	1.9

Source: ONS, NOMIS (Ref. 10.4)

10.3.7. **Table 10-5** shows that the Wholesale and Retail Trade is the largest employment sector within Horsham (17.2%). Administrative and support service activities is next most highly represented sectors (10.3%) followed by Education; Accommodation and food service activities; Professional,

scientific and technical activities and Human Health and Social Work activities sectors (all 8.6%). Overall, the diversity of industries within Horsham includes both higher skilled employment sectors (such as education) and lower skilled sectors (such as Wholesale and Retail Trade). The proportion of employees within each industry sector in Horsham is broadly in line with West Sussex and Great Britain averages overall. The exception is the proportions of employees in Sector H: Transportation and Storage, with almost three times the proportion of employees in the sector within West Sussex compared with Horsham.

## DEPRIVATION

- 10.3.8. The Indices of Multiple Deprivation (**Ref. 10.5**) uses a combination of information relating to seven 'domains': income; employment; health deprivation and disability; education, skills and training; barriers to housing; and crime and living environment to create an overall score of deprivation. Deprivation is scored between 1 and 317 (representing the 317 local authorities within England), with a score of 1 being most deprived and 317 being least deprived.
- 10.3.9. The Indices of Multiple Deprivation 2019 (**Ref. 10.5**) ranks Horsham 290th out of 317 local authorities, indicating that it is in the 10% least deprived local authorities in England.

## HOUSING

- 10.3.10. There are approximately 62,370 dwellings in Horsham based on 2021 Census data. In terms of tenure, Census data reveals that 72.3% of dwellings within Horsham were privately owned, a similar proportion to West Sussex (68.5%).
- 10.3.11. The Horsham District Planning Framework 2015 (**Ref. 2.2**) proposed a housing target of 800 homes per annum, with an aim to deliver 16,000 homes over the twenty-year plan period. The Regulation 19 version of the Local Plan (under review) (**Ref. 10.9**) proposed an average housing delivery target of 1,100 homes per annum between 2021 and 2038. A 'Strategic Housing Market Assessment' (SHMA) (**Ref. 10.10**) was published in 2019 covering the North West Sussex region which comprises of Horsham and Crawley. The SHMA assessed net local housing need of 965 dwellings per annum in Horsham, amounting to a projected need of 19,300 dwellings in the period 2019 to 2036. The SHMA identified that within Horsham, approximately 11.6% of the total dwellings are social rented. This demand was projected to continue rising, and the ongoing need for affordable homes within Horsham is reflected in the Horsham District Planning Framework 2015 (**Ref. 2.2**) Policy 16, which outlines targets for provision of 35% affordable housing on sites of 15 or more units.
- 10.3.12. Under Horsham District's latest standard method derived housing figures as of May 2025, an updated housing target of approximately 1,338 homes per annum has been calculated (**Ref. 10.14**). Additional housing figures will aim to demonstrate and rectify the increasing housing need in the Horsham District and reinforce the importance of bringing forward sustainable sites.

## EDUCATION

### Early Years

- 10.3.13. Early years education refers to provision for children aged 0-4 years old. Attendance at an early years facility is not compulsory and local authorities are not required to provide early years education places for all 0-4 year olds (in the same way as they are required to plan for places for all primary and secondary school aged children). As such, early years provision is typically provided in

a variety of privately operated settings including nurseries and childminders, as well as local authority managed children's centres.

- 10.3.14. There are 11 early years facilities within 2km of the Site, the closest of which are Southwater Day Nursery and Preschool, and Southwater Montessori Nursery (both approximately 0.2km from the Site).

### **Primary Education**

- 10.3.15. All children are required to attend primary schools from the September following their fourth birthday (although it is possible to defer a year in some instances) and it is the responsibility of the local education authority to ensure that sufficient primary education places are available. Primary education is provided in a variety of local authority managed settings. Within 4.5km of the Site there are eight primary schools, the closest of which are Southwater Infant and Junior Academies (both approximately 0.2km to the east) and Castlewood Primary (approximately 0.6km to the east).

### **Secondary Education**

- 10.3.16. Secondary schools typically provide education for children between the ages of 11-18. All children are required to stay in education (or training) until the age of 18 and can also choose to study at a higher education college or skills centre. Similar to primary schools, secondary education is provided in a variety of local authority managed settings. Within 5.9km of the Site there are three secondary schools, the closest of which is Tanbridge House School, approximately 1.7km north of the Site.

### **GP PROVISION**

- 10.3.17. The Site lies within the NHS West Sussex CCG area which comprises 76 GP practices across 11 districts. The role of the CCG is to commission NHS services on behalf of the people who live in that area. The CCG area is the locality within which the majority of residents at the Proposed Development are likely to access primary care. There are five GP surgeries located within 5km of the Site (considered to be a typical walking distance for residents to access GP services in a semi-rural location), all of which are currently accepting new patients (**Ref. 10.6**).
- 10.3.18. The Department for Health and Social Care produces health profiles for each local authority in England. The 2023 local authority health profile for Horsham (the most recently available at the time of writing) indicates that the health status of the population is considerably better for most indicators when compared with the England average.

### **OPEN AND PLAY SPACE**

- 10.3.19. The Horsham District Council Open Space, Sport and Recreation Review 2021 (**Ref. 10.3**) sets out quantity, quality, and accessibility standards for open spaces such as parks, gardens, and play facilities, and aims to inform the future provision of accessible, high quality open spaces in Horsham. There are 52 sites classified as parks and gardens across Horsham, with a total estimated area of approximately 126 hectares (ha). The District has a current provision level of 0.91ha per 1,000 head of population. In Southwater (where the Proposed Development is closest to) there is a total of 7.97ha of parks and gardens, with a total provision of 0.70ha per 1,000 head of population; less than the District average.
- 10.3.20. The closest public open space and play space to the Site is Downs Link, located approximately 0.1km to the south, providing a grassed open space for active and passive recreation. It also

includes a landscaped playable area and equipped playground suitable for younger and older children.

## **FUTURE BASELINE**

- 10.3.21. In terms of economic growth, Horsham has a strong and relatively diverse economy, with excellent road and rail linkages across West Sussex and the wider South East Region. It is likely to continue a rate of steady growth with, and in the absence of the Proposed Development.
- 10.3.22. It is anticipated that in the absence of the Proposed Development, a number of demographic factors would be likely to change due to natural fluctuation and change, including total population and the proportion of working age people, with population trends also seeing an ageing population who may place a greater demand of local services such as healthcare. In terms of demand for housing and local services, these are likely to continue in line with projected population growth, with a continuing need to provide education provision.
- 10.3.23. The draft 'Horsham District Local Plan 2023 – 2040' was formally submitted to the Planning Inspectorate in July 2024 and is currently undergoing examination. Once adopted, this will become the principal development plan document for Horsham, setting out the overall planning framework to support growth and development across the district. It is understood however, that currently it has not been found to be sufficient, with recommendations for revision likely (based on the most recently published update on the Planning Inspectorate website in September 2025). As such, no current target date for adoption is available.

## **10.4 PROPOSED ASSESSMENT METHODOLOGY**

### **SCOPE OF THE ASSESSMENT**

- 10.4.1. The scope of this assessment has been established through an ongoing scoping process. The Socio-economic element of the assessment considers the impacts of the Proposed Development on people and the economy, and the potential for increased demand for community infrastructure as a result of the new population that will reside at the Site. The potentially significant Socio-economic effects associated with the construction and operational phases of the Proposed Development are considered to be:

#### **Construction Phase**

- Direct employment opportunities generated during the construction phase; and
- Indirect and induced employment opportunities generated during the construction stage.

#### **Operational Phase**

- Direct employment opportunities generated during the operational stage;
- Indirect and induced employment opportunities generated during the operational stage;
- Increased local spending from new residents at the Proposed Development;
- Increase in housing stock and contribution to the provision of market and affordable housing units;
- Effects on the demand for education (early years, primary, and secondary) and healthcare facilities from new residents at the Proposed Development; and

- Effects on the demand for recreational / open space and play space from new residents at the Proposed Development.

## ASSESSMENT METHODOLOGY

### Construction Employment Generation

- 10.4.2. Employment generation during the enabling and construction phase will be based on the construction duration and cost. This will be applied to the average gross output per construction industry employee, to determine the estimated total gross employment generation per annum. Leakage and displacement rates, and multiplier effects will then be taken into account to determine the total net employment.
- 10.4.3. Leakage effects are the benefits to those outside the effect area. On the basis of 2024 travel to work data, 52.9% of people working in Horsham live outside the area. This factor will therefore be applied and corresponds to a high leakage rate as set out by English Partnerships Additionality Guidance (**Ref. 10.11**).
- 10.4.4. Displacement measures the extent to which the benefits of a project are offset by reduction of output or employment elsewhere. Overall, it is assumed that there is a moderate level of flexibility in the labour market due to the geographical location of the Proposed Development a construction project located in West Sussex in a locality with moderate linkages to the surrounding areas and the wider South East region and Greater London. As such, a medium level of displacement of 50% is considered appropriate.
- 10.4.5. In addition to the direct employment generated by the Proposed Development itself, there will be an increase in local employment arising from “*further economic activity (jobs, expenditure or income) associated with additional local income and local supplier purchases*”; the indirect and induced effects of the construction activity. The effects of the multiplier depend on the size of the geographical area that is being considered, the local supply linkages and income leakage from the area. The English Partnerships Additionality Guidance provides a guide to the composite multipliers (the combined effect of indirect and induced multiplier effects) which should be applied. In line with this guidance, in the context of site and surrounding locality, a ‘medium’ multiplier of 1.5 is considered appropriate.

### Operational Employment Generation

- 10.4.6. Applying Homes and Communities Agency (now known as Homes England) Employment Densities Guidance (**Ref 10.12**) to the employment generating floorspace within the Proposed Development will provide an estimate of the total gross jobs on-site. To determine the net operational employment, a leakage rate of 52.9%, a medium level of displacement of 50%, and a 1.5 multiplier (as per English Partnerships Guidance on leakage, displacement, and multipliers) will be applied to the gross operational employment estimates.

### Changes to Housing Stock and Affordable Housing

- 10.4.7. A qualitative assessment of effects relating to housing stock will be undertaken by evaluating the quantum of market and affordable housing that would be provided as part of the Proposed Development. This will be compared against the annual housing delivery targets outlined in the North West Sussex SHMA (**Ref. 10.10**) and Horsham District Planning Framework 2015 (**Ref. 2.2**).

### Estimating Population

10.4.8. The number of residents likely to inhabit the Proposed Development will be calculated based on the occupancy rates of the different sized homes derived from the Horsham Section 106 (s106) planning obligations contributions calculator (**Ref. 10.13**) in order to provide a detailed estimated population yield by dwelling size and tenure.

### Additional Local Spend

10.4.9. Additional local spend arising from new residents inhabiting the Proposed Development will be assessed; applying annual average spend per person to the projected residential population of market and intermediate dwellings, taking account of leakage and displacement rates. To ensure a conservative estimate of new local spending arising from the Proposed Development, it is assumed that residents moving to new social rented tenure homes would already be residents in the local area and would thus not generate new net expenditure. To account for this, a displacement rate of 25% will be applied based on Homes England ready reckoners.

### Change in Local Service Demand

10.4.10. A qualitative assessment of effects relating to changes in local service demand (i.e. education and healthcare facilities) will be undertaken by estimating the additional number of residents based on the quantum of residential units provided as part of the Proposed Development. The additional population generated by the Proposed Development will be evaluated against the existing capacity of local services (i.e. educational and healthcare facilities) within the Study Areas relevant to each type of facility. The number of education places required will be based on the child yield rates different sized homes derived from the Horsham s106 planning obligations contributions calculator, which outlines child yields by dwelling type and size. Demand for healthcare will be based on the population yield methodology outlined above.

### Change in Demand for Open and Play Space

10.4.11. The assessment of the change in demand for open space will be undertaken qualitatively based on a review of existing levels of open space and the anticipated increase in resident population as a result of the Proposed Development. The magnitude of change will be determined through an evaluation of the likely demand, against the existing baseline provision levels identified and proposed new open spaces within the Proposed Development. The requirement for new open and play space will be determined based on the population yield methodology outlined above. Open and play spaces will be assessed according to the accessibility and provision levels outlined in the Horsham District Council Open Space, Sport and Recreation Review 2021 (**Ref. 10.3**).

## 10.5 SIGNIFICANT EFFECTS

### ASSESSMENT CRITERIA

- 10.5.1. The methodology for assessing socio-economic impacts will follow standard EIA guidance and will involve:
- Consideration of local policy, plans and development constraints;
  - Assessment of the likely scale, permanence and classification of impacts; and
  - An assessment of the residual and cumulative impacts of the Proposed Development.

- 10.5.2. The assessment will consider the likely direct, indirect and cumulative impacts associated with Socio-economics during enabling, construction and operation. For Socio-economics there is no accepted definition of what constitutes a significant (or not significant) socio-economic effect. It is however recognised that classification of an effect reflects the relationship between the scale of an impact (magnitude) and the sensitivity (or value) of the affected resource or receptor.
- 10.5.3. As such socio-economic effects will be assessed on the basis of:
- Consideration of sensitivity to effects: specific values in terms of sensitivity are not attributed to socio-economic resources/receptors due to their diverse nature and scale, however the assessment takes account of the qualitative (rather than quantitative) 'sensitivity' of each receptor and, in particular, their ability to respond to change based on recent rates of change and turnover (if appropriate);
  - Magnitude of the impact: this entails consideration of the size of the effect on people or business in the context of the area in which effects will be experienced; and
  - Scope for adjustment or mitigation: the socio-economic study is concerned in part with economies. These adjust themselves continually to changes in supply and demand, and the scope for the changes brought about by the project to be accommodated by market adjustment will therefore be a criterion in assessing significance.
- 10.5.4. The assessment aims to be objective and quantifies effects as far as possible. However, some effects can only be evaluated on a qualitative basis. Effects are defined as follows:
- Beneficial classifications of significance indicate an advantageous or beneficial effect on an effect area, which may be minor, moderate, or major in effect;
  - Negligible classifications of significance indicate imperceptible effects on an effect area; and
  - Adverse classifications of significance indicate a disadvantageous or adverse effect on an effect area, which may be minor, moderate or major in effect.
- 10.5.5. Based on consideration of the above, where an effect is assessed as being beneficial or adverse, significance has been assigned using the scale below based on professional judgement:
- Negligible: no receptors (or very few) are beneficially or adversely affected. The effect is unlikely to make a measurable difference on the receptors in the relevant areas of effect;
  - Minor: a small number of receptors are beneficially or adversely affected. The effect is likely to make a small measurable positive or negative difference on receptors in the relevant area(s) of effect;
  - Moderate: a moderate number of receptors are beneficially or adversely affected. The effect is likely to make a measurable positive or negative difference on receptors in the relevant area(s) of effect; and
  - Major: all or a large number of receptors are beneficially or adversely affected. The effect is likely to make a substantial positive or negative difference on receptors in the relevant area(s) of effect.
- 10.5.6. The duration of effect is also considered, with more weight given to permanent changes than to temporary ones. Temporary effects are considered to be those associated with the enabling,

demolition and construction works, and may be short, medium or long-term. Permanent effects are generally those associated with the completed development and are expected to be non-reversible.

- 10.5.7. Effects that are deemed to be **significant** for the purpose of the socio-economic assessment are those that are described as being moderate, major beneficial or adverse.

## 10.6 SENSITIVE RECEPTORS

### CONSTRUCTION

- 10.6.1. For the purposes of this assessment, the sensitive receptors during the construction phase are construction phase employees working at the Site.

### OPERATION

- 10.6.2. The sensitive receptors during the operational phase are the population affected by the Proposed Development which includes future residents and employees at the Proposed Development, and other residents and employees in the local area who utilise new and existing facilities and amenities at the Site and in the surrounding area.

## 10.7 DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

- 10.7.1. The following potentially significant Socio-economic effects have been identified in relation to the Proposed Development, and will be scoped in for further assessment within the ES.

**Table 10-6 - Elements Scoped In for Further Assessment**

Element	Phase	Scoped in	Scoped out	Justification
Employment generation (direct, indirect, and induced effects).	Construction and operation	✓		During the construction and operational phases, there will be increases in direct (i.e. on-site) indirect, and induced employment opportunities at the local (Horsham) and county (West Sussex) levels. Therefore, this will be scoped in to the Socio-economics ES Chapter.
Effects on housing stock and affordable housing	Operation	✓		The Proposed Development will deliver new residential units (unit size and tenure mix to be confirmed). This will contribute to meeting annual housing targets for Horsham. Therefore, this will be scoped in to the Socio-economics ES Chapter.
Effects due to additional local spend (arising from new residents at the Proposed Development)	Operation	✓		Once complete and occupied, it is anticipated that the increase in residential units will result in an increased local population, with an associated increase in local spending. Therefore, this will be scoped in to the Socio-economics ES Chapter.

Element	Phase	Scoped in	Scoped out	Justification
Effects due to changes in local service demand (i.e. education and healthcare facilities)	Operation	✓		During the operational phase, there is likely to be an increase in the demand for education and healthcare facilities due to new residents associated within the Proposed Development. The change in demand for education and healthcare in the context of existing supply will be considered, in conjunction with the new facilities to be delivered in association with the Proposed Development. Therefore, this will be scoped in to the Socio-economics ES Chapter.
Effects on open space and play space	Operation	✓		There is likely to be an increase in the demand for open space and play space due to the increase in residents associated within the Proposed Development. The change in demand will be considered in the context of existing supply and the provision of new open and play spaces as part of the Proposed Development. Therefore, this will be scoped in to the Socio-economics ES Chapter.

10.7.2. A cumulative assessment will also be undertaken for Socio-economics and Human Health, taking into consideration the cumulative schemes in the area.

## 10.8 MITIGATION

10.8.1. A range of standard measures for the Proposed Developments are likely to be adopted throughout the duration of the construction phase. Embedded mitigation measures relevant to Socio-economics will be outlined in the Outline Code of Construction Practice which will accompany the ES; these will include but are not limited to:

- Good practice measures outlined within the Outline Code of Construction Practice, implemented in order to avoid conflict with local residents, businesses, and other community or recreational assets.
- The appointed contractor will be committed to promoting the use of local workforce and suppliers, wherever practicable.

## 10.9 LIMITATIONS AND ASSUMPTIONS

10.9.1. The following limitations and assumptions have been identified:

- This Scoping chapter has relied, in part, on data provided by third parties (e.g. Ordnance Survey Mapping, Office for National Statistics) which are the most up-to-date data available at the time



of writing. No significant changes or limitations in these datasets have been identified that would affect the robustness of the assessment. Baseline data will be updated and kept under review throughout the production of the EIA in order to ensure that (where practicable) the most recently published data is utilised.

- No site survey has been undertaken for the purpose of this Chapter. However, this is not considered to affect the robustness of the assessment for EIA purposes due to baseline information being publicly available.

## 11 TRAFFIC AND TRANSPORT

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### 11.1 STUDY AREA

11.1.1. The study area will match the previous study for the planning application in the Summer of 2022. The ES Traffic and Transport Chapter will assess the following links outlined below:

- Worthing Road – South of A24 Hop Oast Roundabout (comprising a number of links along its corridor within Southwater);
- B2237 Worthing Road – North of A24 Hop Oast Roundabout;
- Southwater Street;
- Mill Straight;
- Church Lane;
- Cedar Drive;
- Fairbank Road;
- Two Mile Ash Road;
- Christ's Hospital Road;
- Station Road;
- A24 (comprising a number of links along the corridor);
- A264; and
- A272.

11.1.2. Subject to the traffic modelling that will be undertaken, there may be additional links included within the assessment. Those that have been included, or excluded, will be set out within detail within the ES Traffic and Transport Chapter.

11.1.3. The trip distribution is to be updated as part of this application and will utilise the Horsham Transport model to distribute trips onto the network.

11.1.4. It should be noted that the trip distribution approach is currently being agreed with WSCC as HA as part of the pre-application consultation.

11.1.1. See Section 3.2 of Chapter 3 for information on consultation.

### 11.2 BASELINE CONDITIONS

11.2.1. The Baseline Conditions will form a key component of both the TA and the EIA and will consider the existing conditions in respect to the following networks;

- Road network;
- Rail network;
- Bus network; and,
- Walking and cycling network.

11.2.2. The review of baseline conditions will be undertaken through a combination of site visits and desktop studies of the local area as appropriate.

#### BASELINE SURVEYS

11.2.3. WSP are aware of the existing Horsham Traffic Model which is anticipated to be the primary source of traffic flow data for the assessment of the Site. Furthermore, WSCC have undertaken additional

traffic surveys in 2023 which have been requested, alongside local traffic surveys commissioned by WSP in 2018 and 2025 within the proximity of the Site to undertake assessments in support of the neighbourhood plan allocation. It is anticipated that these would be utilised to support baseline conditions, noting that due to the Covid-19 pandemic baseline traffic flows have not increased over time.

- 11.2.4. Consultation will continue with WSCC to agree the most appropriate strategy for assessing the impacts of the Site, whether through the preferred use of the strategic traffic model or an alternative option of using local junction traffic flow surveys. It is proposed that these data sources will also form the basis of the traffic impact assessments within the ES, further details of which are provided later in this chapter.

## 11.3 PROPOSED ASSESSMENT METHODOLOGY

### SENSITIVE RECEPTORS

- 11.3.1. In accordance with the Institute of Sustainability and Environmental Professionals (ISEP) (formerly IEMA) guidelines (**Ref. 11.1**), an assessment of sensitive areas/receptors will be undertaken to identify the proximity of each to the local highway network. Locations which will be considered to be sensitive receptors/areas are:
- Schools;
  - Health facilities;
  - Recreational areas;
  - Community facilities; and,
  - Areas with significant pedestrian movements.
- 11.3.2. Only those links that meet the ISEP rules - outlined further below - will be considered in detail within the Traffic and Transport chapter of the ES. However, these links can only be identified once the transport modelling assessment has been completed.
- 11.3.3. From an initial assessment, potential sensitive receptors within the study area are as follows:
- Southwater Infant Academy;
  - Southwater Junior Academy;
  - The Village Surgery;
  - Lintot Square Retail Units;
  - Tanbridge House School;
  - The Downs Link; and,
  - Christ's Hospital.

### POTENTIALLY SIGNIFICANT EFFECTS BOTH FOR THE SITE PREPARATION, EARTHWORKS AND CONSTRUCTION AND OPERATION PHASE

- 11.3.4. The proposed methodology and guidelines for assessing the likely traffic and transport impacts would be based upon the Institute of Sustainability and Environmental Professionals (ISEP) (formerly IEMA) document 'Environmental Assessment of Road Traffic and Movement' (EARTM), July 2023 (**Ref. 11.1**) and in accordance with the Government's planning policies for England, as set out in the NPPF (**Ref. 2.4**).

11.3.5. The ISEP guidance (**Ref. 11.1**) suggests that an increase in traffic associated with a development has the potential to result in impacts relating to the following matters during both the construction and the operational phases of the development:

- Severance;
- Driver Delay;
- Pedestrian Delay;
- Pedestrian Amenity;
- Fear and Intimidation; and,
- Accidents and Safety.

11.3.6. It should be noted that the majority of these elements are dealt with within the TA, and where appropriate the ES Transport Chapter will refer / revert to the TA for the relevant assessment.

### **SEVERANCE**

11.3.7. Severance can be a physical or perceived separation within a geographic area. It was described in the EARTM guidelines (**Ref. 11.1**) as “is the perceived division that can occur within a community when it becomes separated by major transport infrastructure.”. The assessment of severance pays full regard to specific local conditions, in particular the location of pedestrian routes to key facilities and whether or not crossing facilities are provided.

### **DRIVER DELAY**

11.3.8. Delays to drivers can occur at several points on the highway network as a result of traffic that would be generated by a given development. The EARTM guidelines (**Ref. 11.1**) recommend use of computerised junction capacity modelling assessment packages in order to ascertain the level of delay that would be experienced. The guidelines state that delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, capacity.

### **PEDESTRIAN DELAY**

11.3.9. Changes in the volume, composition or speed of traffic may affect the time taken for pedestrians to cross roads and as such, increases in traffic levels are likely to lead to greater increases in delay, although this is also dependent upon the general level of pedestrian activity and other factors such as achievable visibility and the physical infrastructure available for pedestrians. To this end, the EARTM guidelines (**Ref. 11.1**) recommend that reasoned judgements be made in terms of evaluating this effect, as opposed to making reference to prescribed thresholds.

### **PEDESTRIAN AMENITY**

11.3.10. Pedestrian amenity is broadly defined as the relative pleasantness of a journey and can be affected by traffic flow, including composition of traffic, along with matters such as separation from vehicular traffic / footway widths. The EARTM guidelines (**Ref. 11.1**) note that changes in pedestrian amenity may be considered significant where the traffic flow is halved or doubled, with the former leading to a beneficial effect and the latter an adverse effect.

### **FEAR AND INTIMIDATION**

11.3.11. The level of fear and intimidation experienced by pedestrians is governed by traffic volumes, including the level of Heavy Goods Vehicle (HGV) activity, along with factors such as traffic speeds and the level of separation from traffic and / or footway widths for example. There are no commonly

agreed thresholds against which the significance of this effect is determined although special consideration should be given to areas where there are likely to be particular issues, such as high-speed sections of roads with narrow footways and areas where a high level of turning manoeuvres are undertaken. Consideration should also be given to areas subject to high levels of use by more vulnerable people such as school children and the elderly.

## ACCIDENTS AND SAFETY

11.3.12. The EARTM guidelines (**Ref. 11.1**) state that an assessment of Personal Injury Accident (PIA) rates should be undertaken using recent data. The assessment can be supplemented using national statistics that relate to accident rates per vehicle kilometres. The assessment of effect significance should be based on professional judgement, accounting for local circumstances and factors that may elevate or lessen the accident risks. Data for a recent five-year period will be used to inform the baseline assessment.

## PROPOSED METHOD OF ASSESSMENT

11.3.13. The guidance contained in EARTM (**Ref. 11.1**) provides advice specifically aimed at the effects of transport and traffic. It defines the effects that should be regarded as a material consideration and then considers the weight to which those effects should be defined. The guidelines set out, inter alia, a list of environmental effects, which could be considered as potentially material or significant whenever a new development is likely to give rise to changes in traffic flows.

11.3.14. The ISEP list includes severance, Non-Motorised User (NMU) amenity, accidents / safety and driver delay. However, and as acknowledged in the ISEP guidelines (**Ref. 11.1**), the delays are only likely to be significant when the traffic in the network is already, or close to, the capacity of the system.

11.3.15. An assessment of the local highway network and its capacity at the key junctions and links carried out as part of the TA is considered to be sufficient as it will identify locations where the network may reach its capacity. The TA will also develop appropriate mitigation strategies (where needed) to minimise the impacts of the proposals. As such, it is considered appropriate to exclude the driver delay from the assessment undertaken as part of the ES Traffic and Transport Chapter.

11.3.16. DMRB Volume 11 (**Ref. 11.2**) has been updated over the last five, by way of DMRB LA112 (**Ref. 11.3**) which replaced DMRB LA104 (**Ref. 11.4**). LA104 was previously used to determine the sensitivity of links. However, the updated guidance has a change in emphasis, now concentrating on the impacts of trunk road schemes only and therefore dealing with on population and human health and not necessarily on transport impacts as these are generally contained within other documents such as the TA.

11.3.17. To ensure a robust assessment within the ES however, it is proposed to continue using the DMRB LA104 (**Ref. 11.4**) scale of sensitivity as a basis for the links to be assessed. Each of the links identified for a detailed assessment using the rules outlined below will be assigned an environmental value (sensitivity) based on their importance and scale using a five-point scale set out in DMRB LA104 - Environmental Assessment and Monitoring (**Ref. 11.4**) as follows:

- Very high – Very high importance and rarity, international scale and very limited potential for substitution;
- High – High importance and rarity, national scale, and limited potential for substitution;
- Medium – High or medium importance and rarity, regional scale, limited potential for substitution;
- Low – Low or medium importance and rarity, local scale; and,

- Negligible – Very low importance and rarity; local scale.

11.3.18. Following the assignment of sensitivity to the selected links, a magnitude of impact or change (either adverse or beneficial) will be assigned, also based on a scale provided in DMRB LA104 (Ref. 11.4).

11.3.19. It should be noted that DMRB LA104 (Ref. 11.4) provides a general approach to the assessment and it is not explicitly concerned about transport and traffic. As such, the threshold values suggested by the aforementioned ISEP guidelines (Ref. 11.1) aimed at the effects of the transport and traffic will be applied to the DMRB LA104 (Ref. 11.4) scale as follows:

- Major – deterioration/improvement in local conditions or circumstances (+/-90%);
- Moderate – apparent change in conditions (+/-60 to 90%);
- Minor – perceptible change in conditions or circumstances (+/-30 to 60%);
- Negligible – no discernible change in conditions (+/-10 to 30%); and
- No change – no change in conditions (+/-10%).

11.3.20. Finally, the significance of effects will be assigned using a significance matrix as reproduced at Chapter 3 above.

## 11.4 DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

11.4.1. A summary table of the currently identified sensitive receptors is set out below in Table 11-1 It should be noted that this is not a definitive list and will be subject to the outputs from the traffic modelling.

**Table 11-1 - Elements Scoped In or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
Southwater Infant Academy	Construction and operation	✓		Potential for direct impact due to increased traffic along Worthing Road
Southwater Junior Academy	Construction and operation	✓		Potential for direct impact due to increased traffic along Worthing Road
The Village Surgery	Construction and operation	✓		Potential for direct impact due to increased traffic along Worthing Road
Lintot Square Retail Units	Construction and operation	✓		Potential for impact on users routing to and from these facilities due to increased traffic along Worthing Road
Tanbridge House School	Construction and operation	✓		Potential for direct impact due to increased traffic along the A281.
The Downs Link	Construction and operation	✓		Potential for direct impact where the Downs Link operates through the centre of Southwater at grade - due to increased traffic along Worthing Road.
Christ's Hospital	Construction		✓	No projected material use of roads in vicinity of Christ's Hospital for construction routing.

Element	Phase	Scoped In	Scoped Out	Justification
	Operation	✓		Potential for direct impact due to increased traffic along Two Mile Ash Road and Christ's Hospital Road.

## 11.5 MITIGATION

- 11.5.1. In terms of the construction phase, whilst no significant effects are anticipated, it is proposed that the impact of construction traffic can be suitably managed and mitigated through a Construction Logistics Plan (CLP) or Construction Traffic Management Plan (CTMP), subject to discussions with the local authority. This would be a condition to any planning consent.
- 11.5.2. This CLP or CTMP will set out the procedures that will be put in place to ensure that the impact of traffic associated with the construction phase of the Proposed Development will be managed correctly and minimised. It will include construction traffic routing, monitoring and enforcement of the routing and methods to encourage construction workers to travel to site by sustainable modes. In addition, it will identify the sensitive locations that are to be avoided by HGVs, based on the locations identified as such in the ES Traffic and Transport Chapter.
- 11.5.3. In terms of the operational phase, the assessment of development impacts in line with the EIA Regulations tends to require the mitigation to be considered separately, i.e. the development impact is considered and assessed and then the development impact with mitigation is assessed. As traffic volumes may be affected by the capacity of the road network this is not always practical – particularly where local improvement schemes seek to manage travel demand.
- 11.5.4. The ISEP (formerly IEMA) guidelines (**Ref. 11.1**) suggest that associated “...*mitigation measures should be considered as a complete package*” however for the purposes of this chapter, mitigation will be considered in two parts - those infrastructure improvements that are considered necessary to meet capacity needs of the development (and therefore considered as part of the TA) and those additional (environmental) mitigation measures that meet the collective needs of the Proposed Development.
- 11.5.5. The contribution of these additional mitigation measures will form part of the assessment and considered to inform the residual development impacts. These mitigation measures will include bus services, the Travel Plan, pedestrian / cycle crossings, new or improved pedestrian / cycle routes and traffic management measures intended to improve the amenity of road users.

## 11.6 OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

- Enhanced walking and cycling provision, including cycle facilities along the new spine road and secondary access towards the station;
- A Public Transport strategy aimed at reducing the reliance upon private car use; and,
- On site infrastructure, including a community hub and schools to reduce the need for private car use.

## 11.7 LIMITATIONS AND ASSUMPTIONS

11.7.1. The ISEP (formerly IEMA) guidelines (**Ref. 11.1**) identify two broad rules-of-thumb to be used as a screening process in determining the scale and extent of the assessments for the construction and operational phases.

- Rule 1 - include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and,
- Rule 2 - include any other specifically sensitive areas where traffic flows have increased by more than 10%. (Sensitive areas may include accident black-spots, conservation areas, hospitals, links with high pedestrian flows etc).

11.7.2. In respect to Rule 1, the guidelines go on to state:

*Traffic forecasting is not an exact science, and the accuracy of projections is open to debate. It is generally accepted that accuracies greater than 10% are not achievable. It should also be noted that the day-to-day variation of traffic on a road is frequently at least + or -10%. At a basic level, it should therefore be assumed that projected changes in traffic of less than 10% create no discernible environmental impact.*

11.7.3. The guidelines identify that the most discernible environmental impacts of traffic are noise, severance, pedestrian delay and intimidation and they provide additional information on how those impacts should be assessed:

*At low flows, increases in traffic of around 30% can double the delay experienced by pedestrians attempting to cross a road. Whether this is significant in absolute terms requires further assessment. Severance and intimidation are, however, much more sensitive to traffic flow and the Department for Transport, historically, has assumed that 30%, 60% and 90% changes in traffic levels should be considered as 'slight', 'moderate' and 'substantial' impacts respectively.*

11.7.4. The above rules will be applied in the determination of the limit of assessments. In addition, the maximum extent of assessment will be limited to the study area from the traffic impact assessment within the TA.

## 12 WATER RESOURCES, FLOOD RISK AND DRAINAGE

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### 12.1 CONSULTATION

12.1.1. See Section 3.2 of Chapter 3 for information on consultation.

### 12.2 STUDY AREA

12.2.1. The study area for the Site will comprise of the Site itself and adjacent land approximately 50m from the red line boundary on all sides. This includes any waterbodies, aquifers and other water and flood risk related features that the Site could affect.

### 12.3 BASELINE CONDITIONS

- 12.3.1. According to EA's Flood Map for Planning (**Ref. 12.1**), the Site lies entirely within Flood Zone 1, meaning that there is a probability of fluvial and tidal flooding of less than 0.1% every year. This is confirmed by GOV.UK's Long Term Flood Risk Map (**Ref. 12.2**) which shows that the Site is not at risk of flooding from rivers or the sea, the map also shows that the Site is also not at risk from flooding from reservoirs.
- 12.3.2. The Site is classified as a Greenfield site, currently draining via natural overland runoff, land drains and infiltration. The destination for the northern catchment is the unnamed watercourse that bisects the catchment, and is a tributary of the River Arun, whereas the southern catchment drains to the Two Mile Ash Gill, a tributary of the River Adur.
- 12.3.3. Records obtained from Southern Water in July 2019, identify there are no public sewers within the Site, or within the immediate vicinity of the boundaries of the Proposed Development.
- 12.3.4. Existing water supply requirements are assumed to be associated with the dairy farm covering the north of the Site, and barns and associated buildings on the southern portion of the Site only.
- 12.3.5. British Geological Survey (BGS) information (**Ref. 12.3**) indicates that there are no records of superficial deposits and the Site is underlaid upon a bedrock of Weald Clay Formation (Mudstone) and Horsham Stone Member (Sandstone).
- 12.3.6. Environment Agency online sources indicate that the Site is not located within a Groundwater Source Protection Zone. However, the Groundwater Vulnerability is within the medium to low designation for the Site.
- 12.3.7. The Horsham District including Southwater is situated in an area of serious water stress, as identified by the Environment Agency Water Stressed Areas Classification.
- 12.3.8. Water neutrality is a key issue for HDC. The Regulation 19 Local Plan has been under review owing to the Government's announcement of changes to the NPPF (**Ref. 2.4**) in July 2021, and updates in 2024. Natural England issued a statement on 14 September 2021 in relation to water neutrality in the Horsham District and its implications for planning (**Ref. 12.4**).

## 12.4 PROPOSED ASSESSMENT METHODOLOGY

- 12.4.1. **Appendix 12.1** details the legislation, policy and guidance used to inform the methodology for Water.
- 12.4.2. As part of the ES chapter, the following key elements will be undertaken to inform the baseline:
- A desk study to establish site geology, history and current water regime (surface and groundwater);
  - A desk study to establish flood risk baseline conditions, including:
    - Sources of flooding (e.g. tidal, surface water, artificial waterbodies);
    - Existing flood defences/flood mitigation measures;
    - Structures influencing local hydraulics;
    - Probability of fluvial flooding;
    - Climate change;
    - Mitigation measures (e.g. raised ground floors);
    - Residual risk; and
    - A review of how the current site is drained.
  - Consultation and data review with relevant stakeholders as appropriate and depending on the information already available through other studies (e.g. relating to the Water Neutrality guidance); and
  - The assessment will include a staged approach involving an examination of baseline conditions, followed by impact assessment considering both construction and operational stages of the Proposed Development, identification of mitigation measures (i.e. pollution prevention measures) and a review of residual effects.
- 12.4.3. This desk-based assessment will be carried out in parallel with the preparation of the Ground Conditions and Contamination ES chapter, as ground conditions and water quality/quantity issues are closely interrelated.
- 12.4.4. A qualitative assessment of construction and operational effects will be completed, taking into consideration the supporting technical studies. Where feasible and appropriate, a quantitative assessment will be undertaken (based on other studies' results including the Outline Drainage Strategy and capacity checks among others) to assess for example volume of surface water storage and discharge rates.
- 12.4.5. The significance level attributed to each effect will be assessed based on the magnitude of change/effect due to the Proposed Development and the sensitivity of the affected receptor/receiving environment to change. Magnitude of change/effect and sensitivity of the affected receptor/receiving environment will be assessed by adapting the relevant tables within the following documents:
- Design Manual for Roads and Bridges (DMRB) HD 45/09: Road Drainage and the Water Environment (**Ref. 12.5**); the DMRB provides guidance for appraising significance of potential impacts that road projects may have on the water environment; and
  - TAG Unit A3 Environmental Impact Appraisal – Impacts on the Water Environment chapter (**Ref. 12.6**).

## 12.5 DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

12.5.1. Unless the Flood Risk Assessment (FRA) process is going to identify other potentially significant sources of flooding, it is expected that surface water will be the only source of flood risk investigated as part of the assessment. The assessment of the effects of the Proposed Development on Water Resources, Flood Risk and Drainage will therefore involve consideration of the following:

### CONSTRUCTION STAGE

12.5.2. Effects on water resources and flooding with reference to:

- Changes in risk of surface water flooding at the Site and their effects on potential receptors (i.e. construction workers);
- Changes in risk of surface water flooding on the surrounding area and their effects on potential receptors (e.g. residents and users); and
- Changes to the quality of surface water discharged to the drainage network/surface water receptors).

### OPERATIONAL STAGE

12.5.3. Effects on water resources and flooding with reference to:

- Changes in risk of surface water flooding at the Site and their effects on potential receptors (i.e. residents and users);
- Changes in risk of surface water flooding on the surrounding area and their effects on potential receptors (e.g. residents and users);
- Changes to quantity of surface water discharged to the surface water drainage network;
- Changes to quantity of foul water discharged to the foul water drainage network; and
- Changes to potable water demand.

12.5.4. Based on the available information the Site is located within Flood Zone 1, this is the Flood Zone where probability of fluvial and tidal flooding is lowest, less than 0.1% every year. Provided that this is confirmed during the FRA process, as the Site is located away from the fluvial/tidal floodplain, those sources of flood risk will not be considered within the assessment.

12.5.5. The GOV.UK's Flood Risk from Reservoirs Map shows that the Site is not in an area that would be inundated with flood waters due to catastrophic failure of reservoir dams. Therefore, the risk of flooding from this source to the Site is not considered to be significant and will not be considered within the assessment.

12.5.6. With reference to the HDC Strategic Flood Risk Assessment (June 2007) (**Ref. 12.7**), the Site is not anticipated to be in an area susceptible to groundwater flooding. Therefore, the risk of groundwater flooding to the Site or its surrounding areas is not considered significant and will not be considered within the assessment.

12.5.7. Once operational, it is anticipated that the Proposed Development will incorporate an appropriate drainage strategy as primary mitigation. There is anticipated to be a low volume of physical contaminants (sediment) which could potentially be entrained in surface run-off over hardstanding and landscaping and discharged to sensitive receptors. However, this will be subject to a controlled drainage regime. An outline surface water and drainage strategy will be developed based upon the

illustrative masterplan. Development generated surface water drainage will be managed to accord with the requirements of the LLFA and will not increase flood risk downstream of the Site.

12.5.8. Changes to the quantity of surface and foul water discharged during construction are not expected to be significant and are scoped out.

12.5.9. Because of the sensitivity in regard to water supply, requirements during construction have been scoped in. **Table 12-1** sets out those elements which will be scoped into and out of the assessment process.

**Table 12-1 - Elements Scoped in or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
Changes in risk of surface water flooding at the Site and their effects on potential receptors (i.e. construction workers)	Construction	✓		Surface water flood risk is a potential risk to the Site.
Changes in risk of surface water flooding on the Surrounding area and their effects on potential receptors (e.g. residents and users)	Construction	✓		Surface water flood risk is a potential risk offsite.
Changes to the quality of surface water discharged to the drainage network/surface water receptors)	Construction	✓		Construction activities have the potential to introduce contaminants that can enter the drainage network/surface water receptors.
Changes in risk of surface water flooding at the Site and their effects on potential receptors (i.e. residents and users)	Operational	✓		Surface water flood risk is a long-term risk, likely to increase with Climate Change effects.
Changes in risk of surface water flooding on the Surrounding area and their effects on potential receptors (e.g. residents and users)	Operational	✓		Surface water flood risk is a long-term risk, likely to increase with Climate Change effects.
Changes to quantity of surface water discharged to the	Operational	✓		Surface water flood risk is a long-term risk, likely to increase with Climate Change effects.

Element	Phase	Scoped In	Scoped Out	Justification
surface water drainage network				
Changes to quantity of foul water discharged to the foul water drainage network	Operational	✓		A development of this size has the potential to affect the foul water drainage network.
Flood Risk - Fluvial/Tidal			✓	Flood Zone 1.
Flood Risk - Reservoir			✓	Site not effected by reservoir flooding.
Flood Risk - Groundwater			✓	Site not shown to be at risk of groundwater flooding.
Changes to the quality of surface water discharged to the drainage network/surface water receptors	Operational	✓		The proposals represent a significant change in use that can affect surface water quality.
Changes to the quantity of surface and foul water	Construction		✓	Discharge during construction is not expected to be significant compared to the baseline.
Potable Water Supply	Construction	✓		Water neutrality is a key issue for HDC.
Potable Water Supply	Operational	✓		Water neutrality is a key issue for HDC.

## 12.6 MITIGATION

- 12.6.1. It is not envisaged that any secondary mitigation would be required as part of the Proposed Development as mitigation measures to deal with flood risk (e.g. surface water attenuation, Sustainable Urban Drainage Systems (SuDS), raised thresholds, etc.) and the outline surface water drainage strategy would be primary mitigation as it will be inherent to the scheme design.
- 12.6.2. In addition, the nature of mitigation measures to prevent, reduce and offset any significant adverse effects on water resources will be determined through tertiary mitigation methods which would include best practice measures to minimise pollution of surface water and groundwater onsite.
- 12.6.3. During the construction phase the CEMP is an important document that sets out mitigation measures affecting water resources, and construction workers.
- 12.6.4. Mitigation for increased demand for water supply as a consequence of the Proposed Development will be considered and discussed with Natural England and HDC.

## **12.7 OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT**

- 12.7.1. Sustainable drainage strategies can reduce flood risk, and contribute to amenity, ecological and open space aspects of the wider environment. Opportunities for enhancing the environment come through the synergies available if considered at master planning stage.

## **12.8 LIMITATIONS AND ASSUMPTIONS**

- 12.8.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- Groundwater quality issues are discussed as part of the Ground Conditions and Contamination assessment, although the findings will also inform this chapter.

## 13 GROUND CONDITIONS AND CONTAMINATION

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### 13.1 INTRODUCTION

13.1.1. See Section 3.2 of Chapter 3 for information on consultation.

### 13.2 STUDY AREA

13.2.1. The study area has been defined as the red line boundary shown in **Figure 1 – Site Location Plan** in **Appendix 1.1**.

### 13.3 BASELINE CONDITIONS

13.3.1. This assessment of baseline conditions has been undertaken with reference to the basic desk-based study that was completed for the Site on September 2015 by Geo-Environmental Services Ltd, reference GE11097\SEPT15\DSR (**Ref. 13.1**) and a detailed desk study completed in February 2022 by Geo-Environmental Services Ltd, reference GE20620/DSR/FEB22 (**Ref. 13.2**) (based on the Groundsure Enviro + Geo insight report reference GE-8486913 dated 01/02/2022) (**Ref. 13.3**).

#### SITE VISIT

13.3.2. A walkover of the Site was undertaken on the 7<sup>th</sup> February 2022 to assess the current status, land conditions and land use of the Site.

#### PRELIMINARY SITE INVESTIGATION

13.3.3. A preliminary investigation has been carried out to target areas potentially affected by the history of the Site and to sample topsoil across the Site for the agricultural land assessment. Site works consisted of 20 window sample positions to support a preliminary assessment of geotechnical and environmental conditions and 35 hand-pits to support the agricultural land assessment. Based on the Phase 1 Desk Study, the preliminary limited ground investigation focussed on potential Site-wide contamination, together with a limited number of positions where contamination hotspots could be present. The results indicated that contamination was not present at the investigation points and furthermore it could be inferred that there is no widespread contamination within the Site. However, given the preliminary scope of this investigation, further hot spots of contamination may be possible on the Site and a more detailed investigation, with levels of sampling and testing consistent with the recommendations of BS 5930 should be undertaken to better characterise the Site.

13.3.4. A preliminary ground appraisal report was completed in June 2022 by Geo-Environmental Services Ltd, ref GE20620/PGAR/JUN22 (**Ref 13.4**).

13.3.5. An agricultural land assessment was completed in June 2022 by Geo-Environmental Services Ltd, ref GE20620/ALA/JUN22 (**Ref 13.5**).

13.3.6. Observations were made during the preliminary intrusive investigation and walkover for the February 2022 desk study detailed above and reported within the Preliminary Ground Appraisal Report undertaken by Geo-Environmental Service Ltd ref: GE20620-PGAR-JUN22. The ALA and PGIR relate to a slightly wider area than now being considered under the updated scoping report for the Site.

13.3.7. The majority of the Site was covered by a patchwork of agricultural fields. Numerous semi-mature and mature trees were present on-site, predominantly contained within Smith's Copse, located in the

east of the Site, Courtland Wood in the centre of Site and in the north of the Site, immediately south of the A24. Many mature trees were also observed within the hedgerows that separated the fields from one another. Filled ground was evident in the north of the Site. The farmyard to the south of the dairy had also been levelled, with the southeastern corner built up by c.3m in respect to the surrounding field and had a c.1:1 batter.

- 13.3.8. Filled ground was also evident to the south of the A24 in the northeastern corner of the Site. Levels dropped c.3m into the Site from the road with a c.2:1 batter. A historic landfill is present on the northern boundary of the Site and this area is currently covered by woodland. Several surface water features were present on-site. A small pond was present in the southeastern corner. Several drainage ditches were also present, adjacent to hedgerows on the perimeter of numerous fields.
- 13.3.9. Several overhead powerlines were observed running north-south and east-west across the centre of the Site. A gas pipeline marker was also observed in the southern verge on Bonfire Hill Road towards the southern boundary of the Site.
- 13.3.10. Numerous troughs were present across the Site to water livestock. Blue alkathene pipe could be seen feeding the troughs. Two tanks were observed to the rear of an agricultural barn in the west of the Site just south of a residence which at the time was called Bodimans.
- 13.3.11. During the walkover of the Site the topsoil was observed to be a heavy clay across the majority of the Site. Despite the relatively dry conditions prior to the walkover of the Site, standing water was observed on a number of the ploughed fields across the Site, with the fields adjacent to Sayers Farm appearing to be waterlogged in places.
- 13.3.12. There is no Post-1988 Agricultural Data for this Site. The pre-1988 Provisional Agricultural Land classification, classifies the majority of the Site as Grade 3 agricultural land, with areas in the north classified as Grade 4 agricultural land. Based on the ALA undertaken and based on the conditions observed on the Site as part of the 2022 assessment, it is anticipated that the land would be graded as Grade 3b or Grade 4 agricultural land, with isolated areas being classified as Grade 3a.

## 13.4 PROPOSED ASSESSMENT METHODOLOGY/SCOPE OF ASSESSMENT

- 13.4.1. **Appendix 13.1** details the legislation, policy and guidance used to inform the methodology for Ground Conditions.
- 13.4.2. The Preliminary Risk Assessment (PRA) and Conceptual Site Model (CSM) in this report was prepared in accordance with CLR11 (**Ref. 13.6**) (this has subsequently been replaced by Land contamination risk management (LCRM) (**Ref. 13.7**) on the 8th of October 2020) based on information obtained as part of the desk study. Possible risks associated with potential sources of contamination and sensitive receptors identified have been qualitatively assessed following a source-pathway-receptor ('Pollutant Linkage') approach in accordance with current UK protocols.
- 13.4.3. A risk of harm may only exist where a plausible pollutant linkage is present, and where the quantity or concentration of a contaminant is sufficient to pose harm. Under the statutory definition, "Contamination" may only strictly exist where contaminants pose a risk of harm to a receptor. The risk classification has been assessed in accordance with CIRIA C552 (Rudland et al., 2001) (**Ref. 13.8**). A summary of how the risks are derived and their definitions are presented in **Tables 13-4** and **13-5**.

13.4.4. The preliminary risks have been assessed and classified in accordance with the procedures in CIRIA document 552 "Contaminated Land Risk Assessment, A Guide to Good Practice" and will form the baseline conditions. This document uses the following factors within the framework to determine the risk:

- Magnitude of potential consequence (severity) from exposure to contamination; and
- Magnitude of probability (likelihood) of exposure to contamination.

13.4.5. Tables 13-1 and 13-2 provide the definitions in accordance with CIRIA 552 for the various consequence and probability classifications.

**Table 13-1 - Classification of Consequences (CIRIA 552, 2001)**

Classification	Definition
<b>Severe</b>	Short term (acute) risk to human health likely to result in "significant harm" as defined in the Environmental Protection Act, Part IIA. Short term risk of pollution of sensitive water resource (note: Water Resources Act contains no scope for considering significance of pollution). Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem (note: the definition of ecological systems within the Draft Circular on Contaminated Land DETR, 2000) [Ref 13.9]
<b>Medium</b>	Chronic damage to Human Health ("significant harm" as defined in DETR 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem, or organism forming part of such ecosystem. (Note: the definition of ecological systems within Draft Circular on Contaminated Land, DETR 2000)
<b>Mild</b>	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures, and services ("significant harm" as defined in the Draft Circular on Contaminated Land, DETR 2000). Damage to sensitive buildings, services, or the environment.
<b>Minor</b>	Harm, although not necessarily significant, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means of such as personal protective clothing etc). Easily repairable effects of damage to buildings, structures, services.

**Table 13-2 - Classification of Probability (CIRIA 552, 2001)**

Classification	Definition
<b>High Likelihood</b>	There is a pollution linkage and an event that either appears very likely in the short-term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
<b>Likely</b>	There is a pollution risk, and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.

<b>Low Likelihood</b>	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such an event would take place and is less likely in the shorter term.
<b>Unlikely</b>	There is a pollution linkage, but circumstances are such that it is improbable that an event would occur even in the very long term.

13.4.6. The classifications for consequence and probability can be combined to produce a risk category ranging from "very low risk" to "very high risk", detailed in **Table 13-3**:

**Table 13-3 - Comparison of Consequence against Probability**

		<b>Consequence</b>			
		<b>Severe</b>	<b>Medium</b>	<b>Mild</b>	<b>Minor</b>
<b>Probability</b>	<b>High Likelihood</b>	Very High Risk	High Risk	Moderate Risk	Moderate to Low Risk
	<b>Likely</b>	High Risk	Moderate Risk	Moderate to Low Risk	Low Risk
	<b>Low Likelihood</b>	Moderate Risk	Moderate to Low Risk	Low Risk	Very Low Risk
	<b>Unlikely</b>	Moderate to Low Risk	Low Risk	Very Low Risk	Very Low Risk

13.4.7. The possible actions for the various risk descriptors are given in **Table 13-4** below:

**Table 13-4 - Description of the Classified Risks and Likely Action Required**

<b>Risk Descriptor</b>	<b>Definition</b>
Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR there is evidence that severe harm to the designated receptor is currently happening. The risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) and remediation works may be necessary in the short term and are likely over longer term.
Moderate Risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to

	clarify the risk, and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	It is possible that harm could arise to a designated receptor for an identified hazard, but it is likely that this harm, if realised, would at worst be normally mild.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

13.4.8. **Table 13-5** provides a comparison between the risk descriptors derived using the C552 framework and the significance criteria to be used in the ES:

**Table 13-5 - Description of the Classified Risks and Likely Action Required**

Risk Descriptor	Significance Criteria for Environmental Statement
Very high or high risks remaining on site	Major Adverse
Moderate risks remaining on site	Moderate Adverse
Low risks remaining on site	Minor Adverse
Very low risks remaining on site / removal of very low risks	Negligible
Removal of low risks	Minor Beneficial
Removal of moderate risks	Moderate Beneficial
Removal of very high or high risks	Major Beneficial

## 13.5 DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

13.5.1. Possible sources of contamination identified from the desk study are summarised in **Table 13-6** below.

**Table 13-6 - Description of the Classified Risks and Likely Action Required**

Source	Description	Contaminants
Made Ground, shallow soils	The general quality of Made Ground and shallow soils could be impacted by the presence of contamination.	Possible elevated concentrations of metals, metalloids, TPH and PAH compounds, and ACMs. Herbicides, pesticides, and fertilisers.
Historic Landfill/Land Raise Deposits	The material used as fill to raise levels around the Dairy and construct the embankment leading to the A24 may contain contaminants. Additionally, the	Possible elevated methane, carbon dioxide, depleted oxygen. Metals, metalloids, TPH and PAH compounds and ACMs

Source	Description	Contaminants
	material used as fill for the pit in the southwest of Site may contain contaminants.	
Historic Railway Line	A historic railway line ran through the south of the Site. Furthermore, various railway infrastructure is within close proximity to Site, including railway lines, sidings, good sheds. Various contaminants are associated with the embankments, running lines and operations, and may have migrated onto the Site.	Possible elevated heavy metals, phenols, sulphates and PAHs, ash, fuel oils, ethylene glycol, lubricating oils and greases.
Unknown Tanks	Tanks are listed on-site. The condition, size and contents are unknown.	Possible presence of PAH, TPH.
Historic Tank	A tank is shown immediately north of the Site. The condition, size and contents are unknown. Contamination may have migrated onto the Site.	Possible presence of PAH, TPH.
Historic Laundry	A Laundry was present to the south of the Site. Drainage of waste products may have migrated onto the Site.	Possible Inorganic and organic contamination.
Naturally Occurring Aggressive Ground Conditions	Naturally occurring compounds in the Weald Clay Formation which could damage buried concrete.	Possible elevated sulphate, pyrite, and gypsum concentrations.
Ground Gases/Vapours	Deeper areas of Made Ground may be present in some locations at the Site. A risk is only considered to be present if highly organic or volatile contaminants within Made Ground of fill materials are present.	Possible presence of ground gases such as methane and carbon dioxide together with depleted oxygen, trace gases and elevated volatile organic compounds.

13.5.2. The plausible pathways are summarised in **Table 13-7** below. These pathways are based on the proposed end use, including houses and gardens.

**Table 13-7 - Possible Contamination Pathways**

Pathway	Description
Direct Contact	Ingestion of soil particles, ingestion and bioaccumulation in vegetables/fruit and inhalation of soil derived dust (including tracked back dust), dermal contact.
Inhalation	Inhalation of soil dust both inside and outside of buildings.
Vertical & Lateral Migration	Contaminant movement both vertically through leaching/gravity and horizontally along preferential pathways, e.g., services trenches, or with groundwater.

Pathway	Description
Root Uptake	Uptake of soil and waterborne contaminants by plants.
Chemical Attack	Attack of buried plastics and concrete by aggressive ground conditions.

13.5.3. Potential receptors associated with the site and its development are summarised in **Table 13-8** below:

**Table 13-8 - Possible Receptors of Contamination**

Receptor	Description	Comments
Site Workers	Persons involved in construction and future maintenance of the Proposed Development.	Ground Workers could become exposed during site clearance, construction, and maintenance.
End Users	Residents/occupants of the Proposed Development.	The Proposed Development is likely to include areas of managed communal soft landscaping.
Soft Landscaping	Possible areas of planting including lawns, shrubs, trees, etc.	Planting is anticipated in communal soft landscaping.
Built Environment	Buried concrete for foundations and plastics for potable water supply pipes may be laid in contact with contaminated.	Aggressive ground conditions and depths of Made Ground may be present beneath the Site. soils
Adjacent Land Users	Sensitive land uses identified within the immediate vicinity.	Adjacent land uses surrounding the Site comprises residential, commercial, and industrial uses.
Groundwater	Controlled Waters contained within the aquifer(s) beneath the Site.	The whole Site overlies a Secondary 'A' Aquifer. The Site is not situated within an SPZ.
Surface Water	Controlled Waters within lakes, rivers, and ponds, etc., or coastal waters.	Surface water was identified on-site in the form of small ponds, drainage ditches and streams.  No surface water features are present on the part of the Site adjacent to Christs Hospital Station. The closest water feature to the Site is a narrow stream running south of Sparrow Copse.

13.5.4. Site workers involved in the preparation and construction of the development have not been considered further in this assessment as the Principal Contractor is duty bound under the current CDM Regulations to undertake their own risk assessments with respect to their employees.

13.5.5. Whilst the above sources and receptors have been identified, **Table 13-9** summarises the identified plausible pollution linkages and a qualitative assessment of the risks based on the desk study research.

**Table 13-9 - Possible Receptors of Contamination**

Potential Source/ media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
Made Ground and shallow soils	End users	Direct Contact, Inhalation	Likely	Mild	Moderate to Low Future users are likely to come into contact with soils via direct contact within areas of soft landscaping or when tracked back into buildings. Suitable topsoil may or may not be currently present on-site, any imported soils must be of suitable chemical and physical quality for the proposed end use.
	Soft Landscaping	Root Uptake	Likely	Mild	Moderate to Low Soft landscaping is likely to be included within the Proposed Development. Suitable topsoil may or may not be currently present on-site, any imported soils must be of suitable chemical and physical quality for the proposed end use.
	Adjacent land users	Direct Contact, Inhalation	Low	Minor	Low Adjacent site users are at a low risk of coming into contact with affected soils on-site. Additionally, natural soils are not anticipated to represent a risk of harm to human health.
	Water supply pipes	Chemical Attack	Likely	Mild	Moderate to Low

Potential Source/ media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
					Water supply pipes are likely to be placed in natural soils however, locally deeper areas of Made Ground may be present.
	Buildings and infrastructure	Chemical Attack	Likely	Minor	Low Foundations and utilities will be placed within natural soils. however, locally deeper areas of Made Ground may be present.
	Groundwater	Vertical & Lateral Migration	Unlikely	Minor	Moderate to Low The Horsham Stone Member beneath the Site is classified as Unproductive Strata and shallow groundwater is unlikely to be present. However, the Weald Clay Formation which is beneath the majority of the Site is classified as a Secondary 'A' Aquifer.
Off-site Railway Infrastructure, Tank and Historic Laundry	End users	Direct Contact, Inhalation	Unlikely	Medium	Low Future users are unlikely to come into contact with impacted soils via direct contact within soft landscaping
	Soft Landscaping	Root Uptake	Unlikely	Mild	Very Low Soft landscaping is likely to be included within the Proposed Development. Suitable topsoil may

Potential Source/ media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
					or may not be currently present on-site, any imported soils must be of suitable chemical and physical quality for the proposed end use.
	Water supply pipes	Chemical Attack	Unlikely	Mild	Very Low Water supply pipes are likely to be placed in natural soils
	Buildings and Infrastructure	Chemical Attack	Low	Minor	Low Foundations and utilities will be placed within natural soils. however, locally deeper areas of Made Ground may be present.
	Groundwater	Vertical & Lateral Migration	Low	Medium	Moderate to Low The Weald Clay Formation beneath the majority of the Site is classified as a Secondary 'A' Aquifer with shallow groundwater possible present.
Historic Landfill/ Land Raise Deposits, Railway Line and Unknown Tanks	End users	Direct Contact, Inhalation	Likely	Medium	Moderate Future users are likely to come into contact with soils via direct contact within soft landscaping or tracked back into the building. Suitable topsoil may or may not be currently present on-site any imported soils

Potential Source/ media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
					must be of suitable chemical and physical quality for the proposed end use.
	Soft Landscaping	Root Uptake	Likely	Mild	Moderate to Low Soft landscaping is likely to be included within the Proposed Development. Suitable topsoil may or may not be currently present on-site, any imported soils must be of suitable chemical and physical quality for the proposed end use.
	Adjacent land users	Direct Contact, Inhalation	Low	Medium	Moderate to Low Adjacent site users are at a low risk to come into contact with affected soils on-site.
	Water supply pipes	Chemical Attack	Unlikely	Mild	Very Low Water supply pipes are likely to be placed in natural soils however, locally deeper areas of Made Ground may be present.
	Buildings and infrastructure	Chemical Attack	Low	Minor	Low Foundations and utilities will be placed within natural soils. However, locally deeper areas of Made Ground may be present.
	Groundwater	Vertical & Lateral Migration	Low	Medium	Moderate to Low

Potential Source/ media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
					The Weald Clay Formation beneath the majority of the Site is classified as a Secondary 'A' Aquifer with shallow groundwater possible present.
	End users	Direct Contact	Unlikely	Minor	Very Low Future users are unlikely to come into contact with natural soils beneath the Site.
Naturally occurring aggressive ground conditions	Water supply pipes	Chemical Attack	Unlikely	Minor	Very Low Water supply pipes are likely to be placed in natural soils and are unlikely to be affected by any natural aggressive ground conditions.
	Buildings and infrastructure	Chemical Attack	Likely	Mid	Moderate to Low The Weald Clay Formation may contain elevated concentrations of sulphate, pyrite, and gypsum. The concrete mix may need to be sulphate resisting.
	End Users	Inhalation	Low likelihood	Medium	Moderate to Low Extensive putrescible material would be necessary in any Made Ground for significant ground gas production, and this is not anticipated.
Ground gases/ Vapours	Adjacent land users	Inhalation	Unlikely	Minor	Very Low

Potential Source/ media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
					Adjacent site users are unlikely to be adversely affected by ground gases originating on the Site.
	Soft Landscaping	Root Uptake	Low likelihood	Mild	Low Soft landscaping is not expected to be adversely affected by any ground gases.
	Buildings and infrastructure	Gas Accumulation and Potential Explosion of Flammable Gases	Low likelihood	Mild	Low Extensive putrescible material would be necessary in any Made Ground for significant ground gas production, and this is not anticipated.

13.5.6. In addition to contamination risks, the following factors might impact the geotechnical condition of the Site. Hazards identified as being potentially present on Site could have implications for foundation design and construction. A summary of commonly occurring geotechnical hazards is given in the following table:

**Table 13-10 - Possible Geotechnical Hazard**

Geotechnical Hazard	Probability	Engineering Implications
Lateral changes in ground conditions	Likely	Variable ground conditions posed by the differing bedrock geologies across the Site may affect foundation design, construction, and zoning.
Shrinkable soils	Low	The Horsham Stone Member is predominantly non-plastic. The Weald Clay Formation has predominately medium plasticity.
Significant depths of Made Ground	Likely	The infilling of a pit in the southwest of the Site is likely to have resulted in a localised area of deep Made Ground.
Aggressive chemical ground conditions (sulphates)	Likely	The possible presence of sulphate, pyrite and gypsum within the underlying Weald Clay Formation may cause aggressive ground conditions impacting foundation design and construction.
Shallow Groundwater	Likely	Due to the Secondary 'A' aquifer designation of the Weald Clay Formation beneath the centre of the Site, the presence of shallow groundwater is considered to be likely.
Potential for shallow soakaways to be unviable	Low	The anticipated high-water table and cohesive nature of the Weald Clay Formation result in a low probability of successful soakaways.
Potential for dissolution features	Negligible	Soluble or prone to dissolution rocks are not thought to be present beneath the Site
Potential for slope stability issues	Very Low	Slope stability problems are not likely to occur.
Potential for slope stability issues	Very Low	Slope stability problems are not likely to occur.

- 13.5.7. With regards the grade of agricultural land; Natural England published “Developing farmland: regulations on land use” in September 2012 (Ref. 13.10) and the Natural England Technical Information Note, TIN049, “Agricultural Land Classification: protecting the best and most versatile agricultural land”, also in September 2012 (Ref. 13.11).
- 13.5.8. Within TIN049, it states that the MAFF document, “Agricultural Land Classification of England and Wales” published in October 1988 (Ref. 13.12) should be followed when deciding on the correct classification for a particular piece of agricultural land.

13.5.9. Purely based on the conditions observed on the Site, it is anticipated that the land would be graded as Grade 3b agricultural land, although this would be subject to additional study and investigation to properly classify the grading of the Site.

13.5.10. **Table 13-11** outlines the elements scoped in and out of further assessment.

**Table 13-11 - Elements Scoped In or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
Made Ground, shallow soils	Construction and Operation	✓		At this stage we cannot fully scope the impacts from this element. Intrusive investigation works should be carried out in order to clarify the geotechnical and geo-environmental issues pertaining to redevelopment of the site.
Historic Landfill/Land Raise Deposits	Construction and Operation	✓		At this stage we cannot fully scope the impacts from this element. Intrusive investigation works should be carried out in this area to confirm any geo-environmental issues pertaining to redevelopment of the site.
Historic Landfill (possible station car park)	Construction and Operation		✓	Given the usage on this part of the site (car park) and magnitude of risk this could be scoped out as a contamination risk
Historic Railway Line	Construction and Operation	✓		At this stage we cannot fully scope the impacts from this element. Intrusive investigation works should be carried out in this area to confirm any geo-environmental issues pertaining to redevelopment of the site in the vicinity of the historic railway line.
Unknown Tanks	Construction and Operation	✓		At this stage we cannot fully scope the impacts from this element. Intrusive investigation works should be carried out in order to clarify the geo-environmental issues pertaining to redevelopment of the site in this area.
Historic Tank	Construction and Operation	✓		At this stage we cannot fully scope the impacts from this element. Intrusive investigation works should be carried out in order to clarify the geo-environmental issues pertaining to redevelopment of the site in this area.
Off-site Railway Infrastructure, Tank and Historic Laundry	Construction and Operation		✓	Given the usage on this part of the site (car park) and magnitude of risk this could be scoped out as a contamination risk
Naturally occurring compounds that could affect buried concrete	Construction and Operation	✓		At this stage we cannot fully scope the impacts from this element. Intrusive investigation works should be carried out in order to clarify the geotechnical and geo-environmental issues pertaining to redevelopment of the site.

Element	Phase	Scoped In	Scoped Out	Justification
Ground Gases/Vapours	Operation	✓		At this stage we cannot fully scope the impacts from this element. Gas monitoring wells should be installed, initially to baseline the levels of gas and to target any areas of exceedance.
Made Ground, shallow soils	Construction and Operation	✓		At this stage we cannot fully scope the impacts from this element. Intrusive investigation works should be carried out in order to clarify the geotechnical and geo-environmental issues pertaining to redevelopment of the site.
Loss of best quality Agricultural Land	Construction and Operation	✓		Purely based on the conditions observed on the site, it is anticipated that the land would be graded as Grade 3b agricultural land, although this would be subject to additional study and investigation to properly classify the grading of the site.
Lateral changes in ground conditions	Construction	✓		At this stage we cannot fully scope the impacts from this element. Intrusive investigation works should be carried out in order to clarify the geotechnical issues pertaining to redevelopment of the site.
Shrinkable soils	Construction	✓		At this stage we cannot fully scope the impacts from this element. Intrusive investigation works should be carried out in order to clarify the geotechnical issues pertaining to redevelopment of the site.
Significant depths of Made Ground	Construction	✓		At this stage we cannot fully scope the impacts from this element. Intrusive investigation works should be carried out in order to clarify the geotechnical issues pertaining to redevelopment of the site.
Naturally occurring compounds that could affect buried concrete (sulphates)	Construction and Operation	✓		At this stage we cannot fully scope the impacts from this element. Intrusive investigation works should be carried out in order to clarify the geotechnical and geo-environmental issues pertaining to redevelopment of the site.
Shallow Groundwater	Construction and Operation	✓		At this stage we cannot fully scope the impacts from this element. Groundwater monitoring wells should be installed and monitored, preferably over the winter months.
Potential for shallow soakaways to be unviable	Construction and Operation	✓		At this stage we cannot fully scope the impacts from this element. Soakage tests should be undertaken to ascertain the permeability of the soils and establish infiltration rates.

Element	Phase	Scoped In	Scoped Out	Justification
Potential for dissolution features	Construction	✓		At this stage we cannot fully scope the impacts from this element. Intrusive investigation works should be carried out in order to clarify the geotechnical and geo-environmental issues pertaining to redevelopment of the site
Potential for slope stability issues	Construction		✓	This area is to be retained and can therefore be scope out

### 13.6 MITIGATION

13.6.1. To be able to quantify the mitigation required for this Site, additional intrusive investigation should be carried out in line with the following scope of works:

- Further Intrusive investigation works should be carried out in order to clarify the geotechnical and geo-environmental issues pertaining to redevelopment of the Site.
- Soil and groundwater (if encountered) sampling and analysis should be undertaken to inform subsequent geotechnical and geo-environmental risk assessment.
- Ground gas monitoring and assessment should be undertaken to characterise the Site's ground gas regime.
- Laboratory analysis, on soil samples recovered from the exploratory holes for a range of geotechnical parameters to support foundation design and the like.
- Laboratory analysis, on shallow soil samples and groundwater samples recovered from the exploratory holes, for an analytical suite to include the potential contaminants identified within the desk study and encountered during any intrusive investigation. The suite should include commonly occurring metals, non-metals, asbestos, TPH, and PAH, as well as pesticides which may have been used in an agricultural setting.
- Waste Acceptance Criteria testing may be required if surplus spoil is to be disposed of from the development.

13.6.2. It may be necessary to undertake remediation/risk mitigation measures on this Site to break pollutant linkages and thus protect key receptors such as human health, controlled waters, built environment, soft landscaping, and the like. The requirement and extent of any such remediation cannot be determined until such time as an intrusive investigation and associated testing has been completed.

### 13.7 OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

13.7.1. There may be opportunities to remediate contamination in parts of the Site, but a more detailed intrusive ground investigation would be required to ascertain the levels of contamination and therefore the amount of environmental enhancement that could be gained. This detailed intrusive ground investigation should be done in the pre-construction phase of the development.

### 13.8 LIMITATIONS AND ASSUMPTIONS

13.8.1. The following assumptions and limitations have been identified:

- The information collected to date has been desk based in the main, with minimal intrusive investigation to provide a preliminary indication of conditions. These have been used to provide an interpretation of the geotechnical and environmental conditions pertaining to the Site. The recommendations and opinions expressed are based purely on the data obtained.
- A detailed intrusive investigation should be carried out in order to clarify the geotechnical and geo-environmental issues pertaining to redevelopment of the Site.

## 14 GREENHOUSE GASES

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### 14.1 CONSULTATION

14.1.1. For details on consultation please refer to **Section 3.2 of Chapter 3**.

### 14.2 STUDY AREA

14.2.1. The GHG assessment is not restricted by geographical scope but instead would include any increase or decrease in emissions as a result of the Proposed Development, wherever that may be. This includes:

- Construction emissions - from the Proposed Development's carbon footprint but also related to the transport of materials to and from the Site and their manufacture (this may be distant from the Site);
- Operational emissions - (increase or reduction) which result from the end-use of the Proposed Development and any shifts in transport modes/patterns which may occur. Such emissions include those for traffic using the Proposed Development as well as the surrounding regional road network to gain access; and
- End of life process - any emissions arising from stripping out, disassembly, deconstruction and demolition operations as well as from transport, processing and disposal of materials at the end of life of the project.

### 14.3 BASELINE CONDITIONS

14.3.1. In the baseline scenario, GHG emissions occur constantly and widely as a result of human and natural activity including energy consumption (fuel, power), industrial processes, land use and land use change. The GHG assessment will only consider instances in which the Proposed Development results in additional or avoided emissions in comparison to the baseline scenario and its assumed evolution.

#### EXISTING BASELINE

The Site is predominantly undeveloped green land with limited physical infrastructure, resulting in negligible existing GHG emissions. In line with ISEP (formerly IEMA) guidance (**Ref. 14.1**), baseline emissions from buildings, transport, and embodied energy are considered to be zero.

#### FUTURE BASELINE

14.3.2. The demolition of buildings, once confirmed, will be considered as part of the GHG assessment of the Proposed Development. The future baseline scenario for traffic emissions will be determined by applying TEMPro growth factors to baseline traffic data. Regarding operational emissions for embodied carbon and building emissions, the amount of coal in the UK electricity mix has substantially decreased in recent years and low and zero carbon technologies (including photovoltaic, wind and nuclear energy) have been increasingly used to generate a larger portion of the UK's electricity. This has resulted in a reduction of carbon emissions generated from grid-supplied electricity. As the grid decarbonises, the lower amounts of emissions created through using on-site electricity will result in a lower carbon impact.

14.3.3. Also, as the UK has committed to becoming net zero carbon by 2050, that means GHG emissions would be dramatically reduced and any remaining emissions offset, neutralising environmental impact from GHG emissions and slowing climate change. In addition, the Government has recently announced the Future Homes standard that proposes no new gas boilers should be installed in new homes by 2025, meaning that new homes will be heated solely by electric systems (such as heat pumps) or other alternatives, which will be low in GHG emissions following grid decarbonisation.

## 14.4 PROPOSED ASSESSMENT METHODOLOGY/SCOPE OF ASSESSMENT

### GHG ASSESSMENT

- 14.4.1. The assessment would follow the emerging best practice and the ISEP (formerly IEMA) guidance (**Ref. 14.1**). This guidance advocates a 'good practice' approach where GHG emissions are always considered and reported but at varying degrees of detail depending on the EIA and the project in question. **Appendix 14.1** details the legislation, policy and guidance used to inform the methodology for GHG.
- 14.4.2. In line with the guidance, this chapter sets out the methodological approach that would be taken to address GHG emissions associated with the Proposed Development. Existing sources of GHG emissions prior to construction and operation of the Proposed Development (i.e. without development) are identified to assess the current baseline. Sources of GHG emissions following the construction and during operation of the Proposed Development are then assessed, from which the significance, mitigation measures and residual effects are determined.
- 14.4.3. The GHG assessment approach considers emissions throughout the lifecycle of the Proposed Development including:
- Construction stage - embodied carbon emissions associated with manufacturing, transport, replacement, and disposal of the existing and proposed building elements; and
  - Operational stage - embodied carbon emissions associated with replacement/refurbishment of building parts, building emissions associated with buildings' energy use, as well as transport emissions such a vehicle numbers and distances by building users.
  - End of Life stage - embodied carbon emissions associated with decommissioning works and transport of materials to disposal sites or recovery.
- 14.4.4. For all lifecycle stages of the Proposed Development, the assessment will include the following:
- Collection of available data/information on the scale of GHG emitting activities (e.g. number of vehicle trips, kWh electricity) for the baseline scenario and for the Proposed Development. In each case this will cover the Proposed Development's lifespan (60 years); and
  - Calculation of the GHG emissions by applying a suitable emissions factor (tCO<sub>2</sub>e per unit of emissions generating activity).
- 14.4.5. The general approach adopted in the EIA, will be to attribute an effect significance level based on the sensitivity/value of the affected receptor(s) and the magnitude of change arising from the Proposed Development. As there is only one receptor, the climate, it has a consistent sensitivity no matter the location of the emissions source. There is no accepted technical guidance for determining a level of significance (i.e. high or medium) on the sensitivity of the climate. Therefore, the sensitivity of the receptor will not be used to assess significance.

14.4.6. There are currently no agreed thresholds for what level of GHG emissions is considered significant in the context of the EIA Regulations. With regards to assigning significance, the IEMA guidance provides guidance on how to assess GHG emissions in EIA:

*"When evaluating significance, all new GHG emissions contribute to a significant negative environmental effect; however, some projects will replace existing development that have higher GHG profiles. The significance of a project's emissions should therefore be based on its net impact, which may be positive or negative....."*

*.... Whilst there is no single preferred method to evaluate significance, extensive research is being undertaken to explore significance, thresholds for GHG emission assessments, and science-based targets. "*

14.4.7. In the absence of being able to assign a significance level, ISEP (formerly IEMA) further provides some guidance on contextualising a project's GHG emissions:

*"Under the principle that all GHG emissions might be considered significant, and the ongoing research of how to actually measure significance, it is down to the practitioner's professional judgement on how best to contextualise a project's GHG impact. Generating a project's carbon contribution, will enable the impact of your project, to be contextualised against sectoral, local, or national carbon budgets. This will provide the practitioner and the Local Planning Authority with a sense of scale."*

14.4.8. Therefore, to contextualise the carbon emissions of the Proposed Development, these will compare to:

- UK Carbon Budgets (Ref. 14.2) (Table 14-1); and
- RIBA 2030 Climate Change targets (2021) (Ref. 14.3) (Table 14-2)

**Table 14-1 - UK carbon budgets set by the Government (2021)**

Carbon budget period	UK carbon budget
Third: 2018-2022	2,544 MtCO <sub>2</sub> e
Fourth: 2023-2027	1,950 MtCO <sub>2</sub> e
Fifth: 2028-2032	1,725 MtCO <sub>2</sub> e
Sixth: 2033-2037	965 MtCO <sub>2</sub> e

**Table 14-2 - RIBA 2030 Climate Change targets - version 2 (2021)**

RIBA sustainable outcome metrics	Business as usual (new build, compliance approach)	2025 Targets	2030 Targets
<b>Domestic</b>			
Operational Energy kWh/m <sup>2</sup> /y	120 kWh/m <sup>2</sup> /y	<60 kWh/m <sup>2</sup> /y	<35 kWh/m <sup>2</sup> /y

RIBA sustainable outcome metrics	Business as usual (new build, compliance approach)	2025 Targets	2030 Targets
Embodied Carbon kgCO <sub>2e</sub> /m <sup>2</sup>	1200 kgCO <sub>2e</sub> /m <sup>2</sup>	<800 kgCO <sub>2e</sub> /m <sup>2</sup>	<625 kgCO <sub>2e</sub> /m <sup>2</sup>
<b>Non-domestic (new build offices)</b>			
Operational Energy kWh/m <sup>2</sup> /y	130 kWh/m <sup>2</sup> /y DEC D (90)	< 75 kWh/m <sup>2</sup> /y DEC B (50) and/or NABERS Base build 5	< 55 kWh/m <sup>2</sup> /y DEC B (40) and/or NABERS Base build 6
Embodied Carbon kgCO <sub>2e</sub> /m <sup>2</sup>	1400 kgCO <sub>2e</sub> /m <sup>2</sup>	<970 kgCO <sub>2e</sub> /m <sup>2</sup>	<750 kgCO <sub>2e</sub> /m <sup>2</sup>
<b>Non-domestic (new build schools)</b>			
Operational Energy kWh/m <sup>2</sup> /y	130 kWh/m <sup>2</sup> /y	<70 kWh/m <sup>2</sup> /y	<60 kWh/m <sup>2</sup> /y
Embodied Carbon kgCO <sub>2e</sub> /m <sup>2</sup>	1000 kgCO <sub>2e</sub> /m <sup>2</sup>	<675 kgCO <sub>2e</sub> /m <sup>2</sup>	<540 kgCO <sub>2e</sub> /m <sup>2</sup>

14.4.9. The overall carbon emissions of the Proposed Development will then be contextualised by comparing these to the UK Carbon Budgets and RIBA Guidance.

14.4.10. Based on this contextualisation and professional judgement the overall significance of effect of the Proposed Development will be defined as follows:

- **Major effect:** where the Proposed Development meets but does not exceed the “Business as Usual” for embodied carbon and operational energy performance respectively as defined by the RIBA guidance.
- **Moderate effect:** where the Proposed Development meets but does not exceed the “2025 Targets” for embodied carbon and operational energy performance respectively as defined by the RIBA guidance.
- **Minor effect:** where the Proposed Development meets but does not exceed the “2030 Targets” for the embodied carbon and operational energy performance respectively defined by the RIBA guidance; and
- **Negligible:** where the Proposed Development exceeds the “2030 Targets” for the embodied carbon and operational energy performance respectively defined by the RIBA guidance.

14.4.11. As per ISEP (formerly IEMA) guidance, all new GHG emissions contribute to a significant negative environmental effect, so regardless of the level of significance, any negative GHG effect will be treated as significant. Therefore, any major, moderate, minor, or negligible effect will be considered as significant in EIA terms.

## 14.5 DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

### CONSTRUCTION AND OPERATION IMPACTS AND EFFECTS

14.5.1. The emissions sources, described as elements with their associated Lifecycle Stage during the Proposed Development lifespan, have been identified using the ISEP (formerly IEMA) guidance (Ref. 14.1). Professional judgement has been used to consider which elements have the potential to give rise to likely significant effects during construction, operation, and end of life of the Proposed Development. The proposed scope of the assessment is consistent with the framework for the quantification of GHG emissions presented in British Standard (BS) EN 15978:2011 'Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method (Ref. 14.4).

The following elements in **Table 14-3** are proposed to be scoped in or out of further consideration in the EIA.

**Table 14-3 - Elements Scoped in or Out of Further Assessment – GHG Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
Product stage (manufacture and transport of raw materials to suppliers) A1-3	Construction	✓		Raw materials required for the Proposed Development will result in embodied emissions and have the potential to be large.
Transport of materials to site A4	Construction	✓		Construction stage emissions from fuel / energy consumption due to the delivery of material to site have the potential to be large.
Plant and equipment used during construction A5	Construction	✓		Fuel / energy consumption of plant and equipment used during construction would generate GHG emissions.
Land use, land use change and forestry A5	Construction		✓	Emissions from the disposal of biomass are not expected to be large.
Disposal of waste A5	Construction	✓		Emissions from the disposal of waste are unlikely to be large, due to a large proportion of construction waste being inert.
Replacement and refurbishment B2-5	Operation	✓		The replacement and refurbishment of the Proposed Development would release a potentially large magnitude of emissions.
Operational Energy Use B6	Operation	✓		In-use electricity emissions will be released on an annual basis due to the building use.

Element	Phase	Scoped In	Scoped Out	Justification
Operational Water Use B7	Operation	✓		Emissions due to annual potable water usage during the operation phase.
End-user emissions (regional traffic flows) – traffic B9/D	Operation	✓		Changes to regional traffic flows are expected and this has the potential to result in a large change in GHG emissions.
In-use Emissions B1	Operation		✓	This is not considered to be a large emission source.
Maintenance B2-5	Operation		✓	Maintenance associated with the Proposed Development is not considered to be a large emissions source as only a small amount will be additional to the maintenance that already takes place within the region.
Repair B2-5	Operation		✓	The Proposed Development is designed to be maintained rather than repaired, therefore subsequent repair emissions sources are not considered to be large.
Land use, land use change and forestry B8	Operation		✓	The reduction in carbon sequestration due to the Proposed Development is not considered to be large.
Decommissioning process C1-C4	End of Life	✓		Any emissions arising from decommissioning, stripping out, disassembly, deconstruction, and demolition operations as well as from transport, processing and disposal of materials at the end of life of the project.

## 14.6 SUMMARY

14.6.1. The chapter presents the methodology, baseline environment, potential impacts and effects and proposed scope within two sections: climate resilience assessment and GHG assessment.

14.6.2. The GHG Assessment receptor is the climate, and the likely significant effects will be assessed under a 60-year lifespan. The following will be scoped in:

- The Embodied Carbon;
- The Operational Building Use; and
- The Transport related emissions.

## 14.7 LIMITATIONS AND ASSUMPTIONS

- Future improvements to vehicle fuel efficiency and electrification have not been considered. As technology continues to develop, this is likely to result in reduced emissions compared to those that will be used in the assessment.
- The predicted decarbonisation of the grid has not been considered for the GHG assessment. This would potentially result in the actual emissions from the Proposed Development being lower.
- For the purposes of this assessment, it has been assumed that the Proposed Development would be operational for 60 years, which is the average duration for this type of development (**Ref 14.5**).

## 15 CUMULATIVE EFFECTS

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### 15.1 INTRODUCTION

- 15.1.1. To accord with the EIA Regulations (**Ref 1.1**) and best practice guidance, the following types of effects will be considered within the ES:
- Effect interactions – the interaction and combination of environmental effects of the Proposed Development affecting the same receptor; and
  - In-combination effects – the interaction and combination of environmental effects of the Proposed Development with a committed project (or projects) affecting the same receptor.
- 15.1.2. For details on consultation please refer to **Section 3.2 of Chapter 3**.

### 15.2 STUDY AREA

- 15.2.1. The study area for the In-combination Effects Assessment is dependent on the environmental factors which will be assessed in the ES. A study area set to the maximum study area of the technical assessments is anticipated based on the maximum spatial extent of study areas for sensitive receptors of those factors expected to be scoped into the ES.
- 15.2.2. The study area for the Effect Interactions Assessment is based on those identified within the technical assessments which will be defined in the ES.

### 15.3 PROPOSED ASSESSMENT METHODOLOGY

#### In-combination effects

- 15.3.1. There is no widely accepted methodology or best practice for the assessment of In-combination Effects, although there are several guidance documents available, including the Planning Inspectorate's guidance for Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (**Ref 15.1**). Despite being written for Nationally Significant Infrastructure Projects, this guidance is broadly applicable to all EIA developments and an adapted methodology outlined below will be used to inform the approach taken to assess In-combination Effects.
- 15.3.2. The assessment of In-combination Effects will be desk based. A list of committed developments within the study area will be developed by conducting a review of planning applications, and relevant development frameworks and policies in the area of the Proposed Development. This initial long-list will be presented to Horsham District Council for review and comment. The long-list will include both committed developments that are proposed for further consideration and those that are not proposed for further consideration as part of the assessment, along with the justification for this. Upon review by Horsham District Council, this list will be refined to a short-list for assessment in the EIA. A review of the short-list will be conducted within the month prior to submission to account for changes in the local planning context.
- 15.3.3. The long-list of committed developments will be determined based on the criteria below for those developments within the maximum study area (the Zone of Influence (ZOI)) of the technical assessments of the Proposed Development. The ZOI is defined as the maximum spatial extent of which the Proposed Development has the potential to affect the factor receptors. Each potential committed development will be assessed for inclusion on a case-by-case basis, using professional

judgement and consultation with competent technical experts, where required. If a development meets one or more of the below criteria, it will be included in the long list:

- The committed development is of an appropriate nature and scale to result in significant effects;
- The committed development has the potential to overlap the construction and / or operation phases of the Proposed Development;
- The committed development is subject to a planning application (inclusive of those undergoing consultation or appeal) or is known to be having a planning application prepared (e.g. has had a screening opinion published);
- The committed development has been identified in the local plan; and
- The committed development has planning permission.

15.3.4. Any development currently under construction that is expected to be completed before commencement of the construction phase of the Proposed Development will be excluded from the assessment.

15.3.5. The residual effects (as stated in each technical chapter of the ES) of the Proposed Development for assessed environmental factors will be used alongside details of committed developments to determine the residual in-combination effect of the Proposed Development and committed development for each environmental factor. The likely residual effects as a result of each committed development will be determined using available third-party information on said development. Assumptions towards a worst-case scenario will be used when information is not available. Any residual in-combination effect of Moderate or higher will be considered a significant residual effect. Where practicable, suitable mitigation will be proposed.

#### **Effect interactions**

15.3.6. The approach to the assessment of interactions of environmental effects will consider the changes in baseline conditions at common sensitive receptors (i.e. those receptors that have been identified as experiencing likely significant effects by more than one environmental factor) due to the Proposed Development.

15.3.7. The assessment of effect interactions will use the output of the technical assessments reported within the technical chapters. A review of the residual effects of all technical assessments will be undertaken, in line with the following steps:

- Each residual effect will be tabulated against the sensitive receptors identified;
- Only residual effects classified as being of minor, moderate or major significance will be factored into the assessment. Residual effects of negligible or neutral significance will be excluded from the assessment as they are considered to be imperceptible effects to an environmental receptor; and
- Those receptor groups experiencing multiple residual effects of minor significance or above will be presented. The effect interactions will be identified using the worst-case assessment from each of the technical chapters.

## 15.4 MITIGATION

Mitigation measures for cumulative effects may be required if significant residual effects are identified. These will be outlined in the ES.

## 15.5 LIMITATIONS AND ASSUMPTIONS

To ensure transparency within the EIA process, the following assumptions and limitations have been identified for cumulative effects:

- The assessment will be entirely desk-based, no site visits will be undertaken;
- The assessment will be limited to environmental factors considered in the ES, other environmental factors considered in other planning application reports will not be included;
- Consultation activities will be carried out with Horsham District Council. Inputs and comments from Horsham District Council will be limited to those provided in their Scoping Opinion and the ES consultation process on the long-list of committed developments;
- The assessment of in-combination effects will be limited to publicly available information on committed developments, that is provided by Horsham District Council;
- For the purposes of the assessment, professional judgement and a worst-case scenario will be used where there is a lack of information or certainty in relation to a committed development; and
- In the absence of information, it is assumed developers would implement similar mitigation measures to that of the Proposed Development.

## 16 SUMMARY

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### 16.1 SCOPE OF THE EIA

16.1.1. It is proposed that the following environmental factors, as listed under Article 3(1) of EU Directive 2014/52/EU, are included in the scope of the EIA:

- Biodiversity;
- Land;
- Soil;
- Water;
- Air;
- Climate;
- Cultural Heritage; and
- Landscape.

16.1.2. The factor-specific elements scoped in and out of further assessment are outlined in chapters 5-14 in this Scoping Report.

### 16.2 STRUCTURE OF THE ES

16.2.1. The proposed structure of the ES is set out in **Appendix 1.2**.

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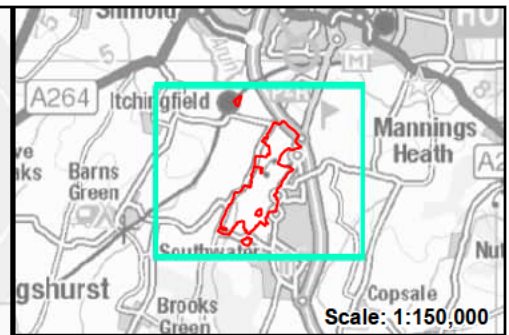
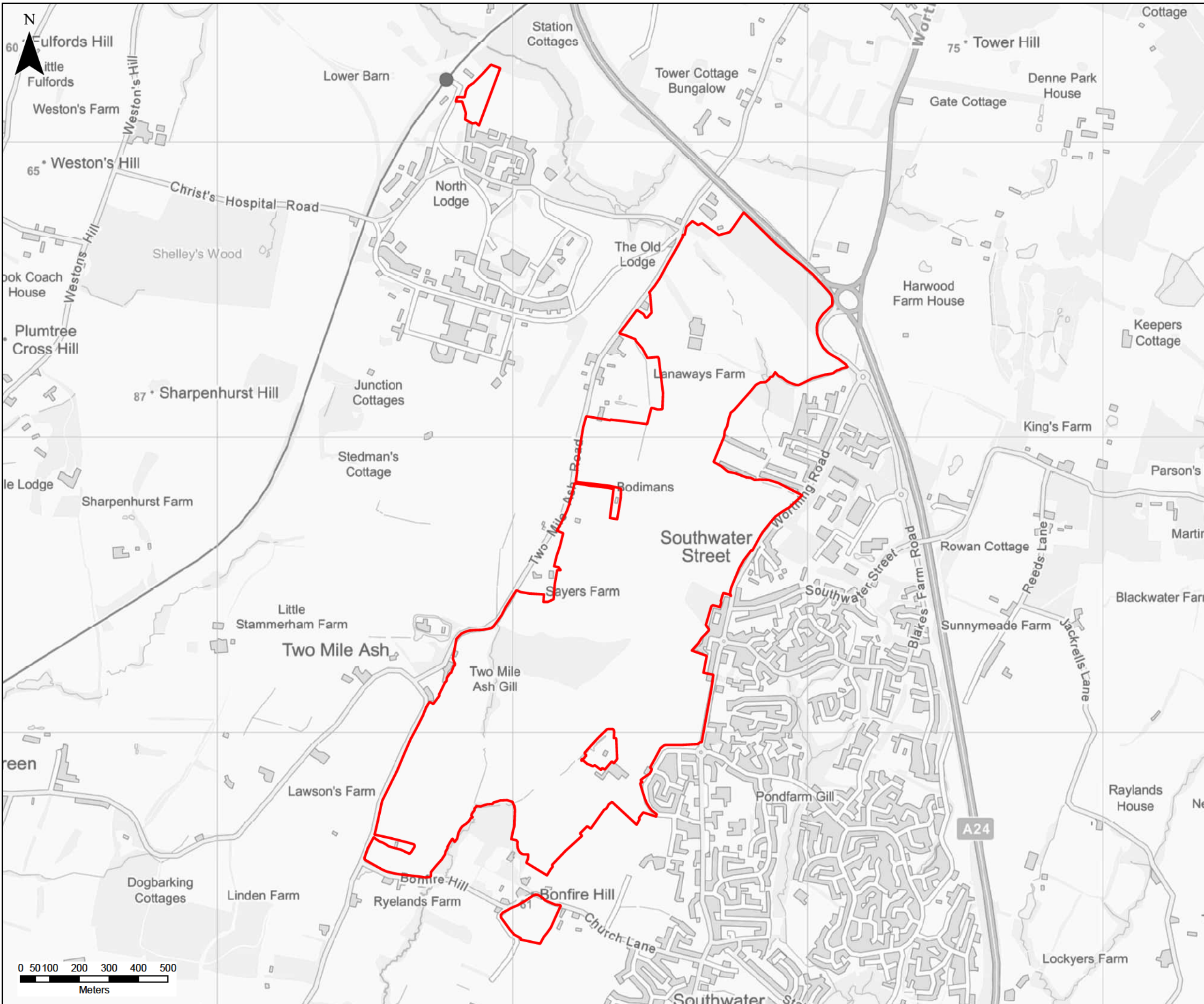
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# Appendix 1.1

## FIGURES





**Legend**  
 Site Boundary

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P01	AP	SP	NL	17/02/2022
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FIRST DRAFT ISSUE				
REVISION	DRAWN	CHECKED	APPROVED	DATE
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PROJECT TITLE:  
**LAND WEST OF SOUTHWATER**

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**FIGURE 1 - SITE LOCATION PLAN**

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# Appendix 1.2

## **STRUCTURE OF THE ES**





## **Volume 1 – Main Report**

### **Front End**

- Chapter 1: Introduction
- Chapter 2: The Existing Site
- Chapter 3: Description of the Proposed Development
- Chapter 4: Reasonable Alternatives Considered
- Chapter 5: Approach to EIA

### **Technical Chapters**

The technical chapters will be as follows:

- Chapter 6: Air Quality
- Chapter 7: Cultural Heritage
- Chapter 8: Ecology
- Chapter 9: Landscape and Visual
- Chapter 10: Noise and Vibration
- Chapter 11: Socio-Economics
- Chapter 12: Traffic and Transport
- Chapter 13: Water Resources, Flood Risk and Drainage
- Chapter 14: Ground Conditions and Contamination
- Chapter 15: Climate Change

Each technical chapter will be structured as follows (X will refer to the chapter number above):

- X.1 Introduction
- X.2 Consultation, Scope, Methodology and Significance Criteria
- X.3 Legislative Framework, Policy and Guidance
- X.4 Baseline Conditions
- X.5 Sensitive Receptors
- X.6 Assessment of Potential Effects, Mitigation and Residual Effects
  - Construction Effects
  - Operation Effects
- X.7 Opportunities for Environmental Enhancement
- X.8 Assumptions and Limitations
- X.9 Summary

X.10 References

**Concluding Chapters**

Chapter 16: Cumulative Effects

Chapter 17: Summary of Effects and Mitigation Measures

**Volume 2 – Technical Appendices**

**Volume 3 – Non-Technical Summary**



# Appendix 1.3

**CRRR**





Berkeley Strategic Land Limited

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# CLIMATE RISK AND RESILIENCE REPORT (VULNERABILITY ASSESSMENT)

Land West of Southwater





**Berkeley Strategic Land Limited**

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**CLIMATE RISK AND RESILIENCE REPORT  
(VULNERABILITY ASSESSMENT)**

Land West of Southwater

**TYPE OF DOCUMENT (VERSION) CONFIDENTIAL**

**PROJECT NO. 2025UK419681**

**OUR REF. NO. 2025UK419681**

**DATE: SEPTEMBER 2025**



Berkeley Strategic Land Limited

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# **CLIMATE RISK AND RESILIENCE REPORT (VULNERABILITY ASSESSMENT)**

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## GLOSSARY

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Term	Definition
Acute events	Extreme climate induced events such as <i>hurricanes, floods, heatwaves, and wildfires</i> that can cause immediate damage to people, assets, infrastructure and ecosystems.
Adaptive capacity	The ability of the systems based on the existing embedded measures, to adjust to potential damage to take advantage of opportunities or to respond to consequences.
Chronic events	Climate induced long-term changes that may translate into a hazard, such as <i>sea level rise, increasing average temperatures, and changing precipitation patterns</i> .
Climate hazard	The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.
Climate impact	“Impact” is used primarily to refer to the effects on natural and human systems of extreme weather and climate events and of climate change. Impacts generally refer to effects on lives, livelihoods, health, ecosystems, economies, societies, cultures, services and infrastructure due to the interaction of climate change or hazardous climate events occurring within a specific time-period and the vulnerability of an exposed society or system. Impacts are also referred to as consequences and outcomes. The impacts of climate change on geophysical systems, including floods, droughts and sea level rise, are a subset of impacts called “physical impacts”.
Climate parameter	The broad classification of climate variables, including temperature, humidity, precipitation, wind and sea level.
Climate trend	Climate trends refer to the pattern of climate change over decades to understand how the climate is changing. Trends indicate potential climate hazards that may arise in a climate parameter.
Confidence	The level of certainty in <i>climate trend</i> data. Confidence is assessed by considering the range in the climate data percentiles (10 <sup>th</sup> , 50 <sup>th</sup> and 90 <sup>th</sup> ) and the likelihood and degree to which the projected trend will occur.
Exposure	The presence of people, livelihoods, species or ecosystems, environmental functions, services, resources, infrastructure, or economic, social or cultural assets in places and settings that could be affected.
Impact consequence	The outcome of the impact, considering the severity of the hazard, vulnerability and adaptive capacity of the people, infrastructure or systems.
Impact likelihood	The chance of an impact on people, infrastructure systems and assets, occurring due to a climate induced risk

Term	Definition
Intensity of change in climate trend	Refers to the strength or magnitude of change in a specific climate parameter over time and may indicate how quickly or severely a particular aspect of the climate is changing.
Physical risk	Physical risk refers to the potential harm from climate induced hazards to people, assets, infrastructure and ecosystems. These may arise from <i>immediate impacts</i> of sudden extreme weather events (Acute Physical Risks) or <i>gradual, long-term changes</i> (Chronic Physical Risks).
Project components	The key components of the Proposed Development which may be impacted by <i>climate hazards</i> .
Resilience	The capacity of systems and its component to anticipate and cope with a hazardous event or trend or disturbance, and accommodate, or recover from the effects of a hazardous event or trend in a timely and efficient manner.
Risk	Risk is the outcome of the dynamic interaction between the vulnerability of <i>project components</i> and the assessment of impact likelihood and impact consequence as result of <i>climate hazards</i> .
Sensitivity	Degree to which an element or a combination of elements shaping a system or species is affected, either adversely or beneficially, by climate variability or change.
Susceptibility	Helps in assessing how likely individuals, infrastructure and ecosystems are to be adversely impacted from climate-induced hazards.
Vulnerability	Propensity or predisposition to be adversely affected.

Definitions provided are adapted from the IPCC (Intergovernmental Panel on Climate Change) (**Ref 1.1**) and ISO 14091:2021(**Ref 1.2**) glossaries, ensuring alignment with widely recognised standards on climate and risk terminology. These sources provide structured, precise language that supports global understanding and consistency in discussing climate-related issues.

# 1 INTRODUCTION

---

## 1.1 PURPOSE

- 1.1.1. To support the Environmental Impact Assessment (EIA) for the Land West of Southwater ('the Proposed Development'), this Climate Risk and Resilience Report (CRRR) considers how the Proposed Development may be vulnerable to climate change. The CRRR aligns with the EIA Regulations (**Ref. 1.3**) which require that "A description of the likely significant effects of the development on the environment resulting from, *inter alia* ...the vulnerability of the project to climate change" is considered within the assessment.
- 1.1.2. The CRRR is a two phased approach, with the first phase (CRRR Vulnerability Assessment) considering the Proposed Development components which may be vulnerable to climate change (completed in this report). The second phase (CRRR Impact Risk Assessment) will accompany the Environmental Statement (ES) and will assess the likelihood and consequence of potential climate related impacts which may affect the Proposed Development.
- 1.1.3. The Proposed Development comprises a residential-led development to provide up to 1,000 homes (a mix of C2 and C3 use classes), an employment area, community and leisure facilities including a community hub, provision for nursery, primary and secondary school, gypsy and traveller pitches, landscaping, open space and new road improvements. The Site is located west of and adjacent to Southwater, West Sussex and is located within the administrative area of Horsham District Council (HDC).

## 1.2 APPROACH

- 1.2.1. The CRRR reports on the outcomes of a Climate Change Risk Assessment (CCRA) to define the risk and resilience of a Proposed Development. A CCRA is a dynamic analysis that identifies and evaluates the impacts of physical climate change on the Proposed Development assets and operations. Physical climate risks are the damages and losses that occur due to the consequences of climate change. These physical risks result from acute events, such as flooding, wildfires and extreme heat, and chronic climatic changes like droughts and sea level rise.
- 1.2.2. The CRRR and CCRA has been developed using industry best practice, including Institute of Sustainability and Environmental Professionals (ISEP) (formally Institute of Environmental Management and Assessment (IEMA)) Environmental Impact Assessment (EIA) Guide to Climate Change Resilience and Adaptation (**Ref 1.4**), ISO 14090: Adaptation to climate change – Principles, requirements and guidelines (**Ref 1.5**) and ISO 14091 Adaptation to climate change - Guidelines on vulnerability, impacts and risk assessment (Ref 1.2).

## 1.3 STRUCTURE

- 1.3.1. This report provides the methodology for the development of the CCRA (**Section 2**) and presents the relevant climate data (**Section 3**). This climate data is used to consider how the changing climate will affect the Proposed Development, determining the vulnerability of the Proposed Development components (**Section 4**).

## 2 METHODOLOGY

---

### 2.1 OVERVIEW

2.1.1. The CCRA Vulnerability Assessment follows a step-by-step methodology, which aims to scope in or out components and climate hazards from further assessment based on the vulnerability of Proposed Development components to the climate hazard. The steps for the CCRA Vulnerability Assessment are:

- Identification of climate change trends and associated hazards using observed climate data and future projections and defining the projected intensity of change.
- Determining the sensitivity of the Proposed Development components by their susceptibility to changes in function or form due to climate hazards.
- Determining whether the components are exposed to the climate hazards.
- Identifying existing resilience to climate change within control measures (known as adaptive capacity). This step is reviewed and updated as the design progresses.
- Determination of component vulnerability, as a function of sensitivity, exposure and the intensity of change of the hazard, and accounting for adaptive capacity.
- Identification of potential impacts which may occur to the Proposed Development as a result of climate change.

2.1.2. The determination of vulnerability of components will support the scoping decision. Outcomes of 'very low' and 'low' vulnerability will be scoped out of further assessment.

2.1.3. Outcomes of 'moderate', 'high' or 'very high' vulnerability will undergo further assessment which will be reported in the CCRA Impact Assessment delivered (where required) at the ES Stage. The CCRA Impact Assessment fulfils the final stages of the CRRR where an assessment of the likelihood of the impact occurring and the magnitude of the consequence of the impact are considered, using a risk based approach and take into account the implementation of the design control measures.

2.1.4. The findings derived from the CRRR provide a framework to support effective decision-making about the Proposed Development's design, construction, operation, maintenance, and decommissioning. The objective of using this approach is to ensure climate change has been considered within the design and planning of the Proposed Development.

### 2.2 CLIMATE TRENDS AND HAZARDS

2.2.1. To identify the climate trends and hazards, current and future baselines were established.

2.2.2. The current baseline is based on historic climate data obtained from the Met Office records (**Ref 1.6**) for the closest meteorological climate station to the Site (Charlwood climate station), Met Office Regional Climate Profile for the England SE & Central S region (**Ref 1.7**) and key findings from the latest State of the UK Climate Report (**Ref 1.8**).

2.2.3. To establish the future baseline, the UKCP18 projections (**Ref 1.9**) have been used to analyse future changes in a range of climate variables that may be experienced at the Site. The Climate Risk Indicators (CRI) (**Ref 1.10**), developed as part of the UK Climate Resilience Programme, have been used to obtain data for the future climate projections to inform the assessment. The CRI utilises the UKCP18 projections (**Ref 1.9**) and allows for a range of climate related indicators to be assessed.

- 2.2.4. The CRI data for the Local Authority area of Horsham have been used for this assessment (**Ref 1.10**).
- 2.2.5. The CCRA considers three time periods over the 21st century. These time periods have been guided by the design life of Proposed Development and the available data within UKCP18 (**Ref 1.9**):
  - Current baseline – the period 1991-2020 has been used to represent baseline or current conditions.
  - Short-term future – the period 2021-2050 (2030s) has been used to understand short-term climate risks and incorporate the construction phase activities.
  - Medium-term future – the period 2041-2070 (2050s) has been used to understand medium-term climate risks and has been used to assess the operational phase.
  - Long-term future – the period 2071-2100 (2080s) has been used to assess long-term climate risks and has been used to assess the operational phase.
- 2.2.6. The future climate scenarios are based on Representative Concentration Pathways (RCPs) to model and project future climate. The assessment considers RCP 8.5 as a high emissions pathway representing a potential future which is slow to transfer to low-carbon energy provision. By incorporating timeframes into the climate scenarios, the climate projections will span a representative range of plausible future conditions and provide a more useful representation of uncertainty.
- 2.2.7. Analysis of the baseline and future climate scenarios allows for climate trends to be identified. The level of confidence in the climate data is evaluated, by considering the likelihood and degree to which the climate trend is occurring and direction of the trend based on the best available climate science. The evaluation is based on the level of uncertainty in climate science, and the variation between the 10th and 90th percentiles of the climate projections. A rating of low, moderate, and high confidence is provided for each climate trend, based on the following criteria:
  - **High confidence:** Climate science has a good level of confidence in the modelled data, or the trend over all percentiles is the same.
  - **Moderate confidence:** Climate science has a moderate level of confidence in the modelled data. The climate trends over the 10th and 90th percentiles suggest the climate event may or may not happen, but there is still a clear trend in the 50th percentile.
  - **Low confidence:** Climate science is too uncertain to model the climate trend / projection data with any significant level of accuracy or there are limited to no projections available. The climate trends over the 10th and 90th percentiles suggest the climate event may or may not happen.
- 2.2.8. Associated climate hazards are identified from the climate trends. The hazard likelihood and intensity of the climate hazard occurring are rated on a five-point scale from very low to very high (**Table 2-1**). The rating is undertaken for each of the timeframes (2030s, 2050s and 2080s) to indicate the direction of travel of the climate hazard.

**Table 2-1 – Criteria used to assess the climate hazard likelihood and intensity of change**

Level	Qualitative description
Very high	The climate hazard occurs very frequently, and / or the intensity of change is significant / noticeable

<b>High</b>	The climate hazard or event occurs frequently, and / or the intensity of change is noticeable
<b>Moderate</b>	The climate hazard or event occurs occasionally, and / or the intensity of change may be noticed
<b>Low</b>	The climate hazard or event occurs very occasionally, and / or the intensity of change is unlikely to be noticed
<b>Very low</b>	The climate hazard or event rarely and / or the intensity of change is unlikely to be perceptible

## 2.3 PROPOSED DEVELOPMENT COMPONENTS: IDENTIFICATION AND VULNERABILITY

- 2.3.1. Key components of the Proposed Development to be assessed within the CRRR comprise those that have the potential to be substantially adversely impacted by climate change. The components are:
- Construction site, plant and equipment and workers;
  - Dwellings;
  - Commercial, schooling and leisure facilities;
  - Gypsy and traveller pitches, landscaping and open space;
  - New road improvements; and
  - End users.
- 2.3.2. The vulnerability of Proposed Development components considers their exposure, sensitivity and existing adaptive capacity or resilience to climate hazards.
- 2.3.3. The exposure rating identifies if the climate hazard will interact with the Proposed Development components. For example, the components may be located below ground or within a building which will prevent them from being exposed to certain climate hazards. Exposure is based on a binary 'yes/no' basis.
- 2.3.4. The sensitivity rating is based on literature review and knowledge of the Proposed Development to indicate how susceptible the components are to the climate hazard. The rating, on a five-point scale, considers how much damage, or how altered the components may be to each climate hazard. **Table 2-2** provides the criteria for assessing sensitivity.

**Table 2-2 - Criteria used to assess the sensitivity of Proposed Development components**

<b>Level</b>	<b>Qualitative description</b>
<b>Very high</b>	The component is highly susceptible to be altered by the projected changes to climate (e.g., lose much of its original function and form).
<b>High</b>	The component is directly affected by the climate hazard and may lose some of its form and function.
<b>Moderate</b>	The component is able to tolerate some climatic conditions without being fully altered though remains susceptible to being altered to some extent.

Low	The component would be able to tolerate some climatic conditions with minimal impact to their function and form.
Very low	The component is not susceptible to be altered by the projected changes to climate as the climatic factors have little influence on the component.

2.3.5. Existing climate resilience or adaptation measures (referred to as adaptive capacity) are taken into account for each component. Such measures may include technological and engineering solutions (termed ‘grey’ measures), nature-based solutions (‘green’ measures), or soft measures which include policy, legal, social, management and financial measures. The adaptive capacity of the Proposed Development has been informed through knowledge of the Proposed Development, understanding of legislative requirements and good practice in construction and design. The adaptation measures are reviewed and updated as the Proposed Development design develops between the EIA Scoping stage and the EIA ES stage. A rating on a five-point scale is assigned to each component for each climate hazard. The rating, as demonstrated in **Table 2-3** is inverse to other criteria used, as components with high adaptive measures rate less than those with poor adaptive measures.

**Table 2-3 - Criteria used to assess the effectiveness of design measures (adaptive capacity) of the Proposed Development components**

Level	Qualitative description
Very high	The adaptation measures are very robust and are expected to reduce climate impacts to a tolerable level without the need for further measures.
High	The adaptation measures provide good adaptive capacity, no further design measures are required however monitoring and maintenance is required throughout the design life to review the level of effectiveness.
Moderate	The adaptation measures provide fair adaptive capacity, where some level of risk is tolerable and accepted.
Low	The adaptation measures provide a poor level of adaptive capacity, however the risk is accepted.
Very low	There are little to no adaptation measures and there is a high risk that the climate hazard will affect the function of the assets.

2.3.6. A vulnerability value is calculated for each time period considering the climate hazard, sensitivity adaptive capacity and exposure. Firstly, the sensitivity and adaptive capacity for each Proposed Development component is assessed using the matrix outlined in **Table 2-4**.

**Table 2-4 - Risk matrix: Sensitivity x adaptive capacity**

	Adaptive capacity				
	Very Low	Very Low	Very Low	Very Low	Very Low

<b>Sensitivity</b>	<b>Very Low</b>	Very Low	Very Low	Very Low	Low	Low
	<b>Low</b>	Very Low	Low	Low	Low	Moderate
	<b>Moderate</b>	Very Low	Low	Moderate	Moderate	Moderate
	<b>High</b>	Low	Low	Moderate	High	High
	<b>Very High</b>	Low	Moderate	Moderate	High	Very High

2.3.7. The output from the sensitivity x adaptive capacity matrix is then assessed against the climate hazard, using the matrix in **Table 2-5**.

**Table 2-5 - Risk matrix: Raw vulnerability x hazard**

		<b>Raw vulnerability</b>				
		<b>Very Low</b>	<b>Low</b>	<b>Moderate</b>	<b>High</b>	<b>Very High</b>
<b>Hazard</b>	<b>Very High</b>	Low	Moderate	Moderate	High	Very High
	<b>High</b>	Low	Low	Moderate	High	High
	<b>Moderate</b>	Very Low	Low	Moderate	Moderate	Moderate
	<b>Low</b>	Very Low	Low	Low	Low	Moderate
	<b>Very Low</b>	Very Low	Very Low	Very Low	Low	Low

2.3.8. As exposure is determined through a binary ‘yes’ / ‘no’ assessment, where Proposed Development components are not exposed to the climate hazard, the risk score is identified as not applicable.

2.3.9. The overall vulnerability rating is categorised through the five point scale for each Proposed Development component and climate hazard, as set out in **Table 2-6**.

**Table 2-6 - Vulnerability categories**

<b>Vulnerability rating</b>	<b>Vulnerability category</b>					
	Not applicable	Very low	Low	Moderate	High	Very high

2.3.10. For the purposes of the assessment, any risks with a rating of moderate, high or very high are considered to have the potential to result in material risks to the Proposed Development.

2.3.11. Where components with moderate, high or very high vulnerability are identified, these will be taken forward for the likelihood and consequence of impact assessment which will be presented at the ES stage of the EIA.

## 2.4 IMPACT IDENTIFICATION

- 2.4.1. Potential impacts which may occur to the Proposed Development components as a result of climate change are identified following the vulnerability assessment, for components and climate hazards which have moderate, high or very high vulnerability. Impacts are identified through literature review, knowledge of the of the Proposed Development, understanding of legislative requirements and good practice in construction and design.
- 2.4.2. The steps described in **Sections 2.2, 2.3 and 2.4** have been undertaken as part of the CRRR Vulnerability Assessment to support the scoping report. The outcomes of the vulnerability assessment are found in **Section 4**.

## 2.5 ASSESSMENT NEXT STEPS

- 2.5.1. Where moderate, high or very high vulnerabilities are identified in the CCRA Vulnerability Assessment, a further assessment (CCRA Impact Assessment) will be triggered and completed to support the ES. The methodology for the CCRA Impact Assessment builds on that already set out, and completes a likelihood and consequence impact and risk rating, as described below

### LIKELIHOOD AND CONSEQUENCE OF IMPACT

- 2.5.2. Completed to support the ES stage of the EIA, a risk assessment is undertaken by assessing the likelihood of the climate impact occurring and the magnitude of the consequence of the impact, which takes into account design control measures. The criteria used for assessing the likelihood of the climate change impact is contained in **Table 2-7**.

**Table 2-7 - Criteria used to assess likelihood of climate change impact.**

Level	Qualitative description
Very high	The impact is anticipated to occur frequently (approximately annually) or is almost sure to happen.
High	The impact is anticipated to occur regularly (approximately once every ten years) or is likely to happen.
Moderate	The impact is anticipated to occur limited times (approximately once every 30 years) or as likely it is unlikely to happen.
Low	The impact is anticipated to occur occasionally (approximately once in 60 years) or is unlikely to happen .
Very low	The impact is anticipated to occur rarely (approximately once every 100 years) or is almost sure to not happen.

- 2.5.3. If the climate change impact was to occur, the consequence rating considers (where appropriate to the Proposed Development) health, safety and environmental (HSE) damage; structural integrity; and functionality aspects which may impact the Proposed Development components and operations. When assigning a rating, the consequence element which is considered most appropriate to the impact is used – it is not required for all criteria to be met. The consequence

rating takes into account the known adaptive measures for the components. The criteria for assessing consequence are set out in **Table 2-8**.

**Table 2-8 - Criteria used to assess the consequence of climate change impact.**

Level	Qualitative description
Very high	Permanent and extensive damage. Disruption lasting substantially more than ten days as this will include unplanned and early renewal of large portions of the facility / infrastructure due to damage. Severe health effects and / or fatalities.
High	Facility / infrastructure damage. Disruption lasting more than three but less than ten days. Unplanned maintenance and early renewal of some portions of infrastructure or sub-assets. Severe health effects. Significant effect on the environment, requiring remediation.
Moderate	Limited facility / infrastructure damage with damage recoverable by maintenance or minor repair on a small portion of the infrastructure / assets. Disruption lasting more than one but less than three days. Adverse effects on health and / or the environment.
Low	Localised facility / infrastructure disruption. No permanent damage, minor restoration work required which may require facility closure lasting less than one day. Slight adverse health or environmental effects.
Very low	No facility / infrastructure damage, minimal adverse effects on health, safety and the environment. Facility doesn't shut down.

## RISK RATING

- 2.5.4. The risk rating is calculated considering the vulnerability, impact likelihood and impact consequence for each time period to give a five-point scale (very low, low, moderate, high, very high) for each Proposed Development component and climate impact.
- 2.5.5. Firstly, the impact likelihood and consequence are assessed using the matrix set out in **Table 2-9**.

**Table 2-9 - Risk matrix: Impact likelihood x impact consequence / Impact x vulnerability**

		Impact consequence / Impact				
		Very Low	Low	Moderate	High	Very High
Impact likelihood / Vulnerability	Very High	Low	Moderate	Moderate	High	Very High
	High	Low	Low	Moderate	High	High
	Moderate	Very Low	Low	Moderate	Moderate	Moderate
	Low	Very Low	Low	Low	Low	Moderate
	Very Low	Very Low	Very Low	Very Low	Low	Low

2.5.6. The output from the impact likelihood x impact consequence matrix is then assessed against the vulnerability rating, using the same matrix. The output of this provides the overall risk rating, as set out in **Table 2-10**.

**Table 2-10 – Overall risk rating**

	Risk category					
Risk rating	Not applicable	Very Low	Low	Moderate	High	Very High

2.5.7. Where impacts with moderate, high or very high risk are identified, additional measures to reduce the risk will be made in the CRRR Impact Risk Assessment to support the EIA ES stage.

## 3 CLIMATE CHANGE DATA

---

### 3.1 CURRENT CLIMATE

3.1.1. This section provides a summary of the climate trends over the past three decades (1991–2020) for temperature, precipitation (rain and snow), wind, humidity, flood risk, slope failure and seasonal sunshine hours. This provides an understanding of how recent climate trends have impacted the Proposed Development location. For context, the current baseline presents local, regional and national information.

#### UK CONTEXT

3.1.2. According to the latest State of the UK Climate 2024 Report (published 2025) (**Ref 1.8**), the UK's climate is changing, with recent decades warmer, wetter, and sunnier than the 20th century on a national and local scale. This report highlights that the UK land temperatures over the last decade have warmed by 1.24°C compared to 1961–1990, which is at a broadly consistent, though slightly higher, rate than the observed change of 1.23°C for global mean surface temperatures over land. The key findings from the report are:

- The last 3 years have been in the UK's top five warmest on record.
- The average highest maximum temperature over the most recent decade 2015–2024, 35.9°C, was 2.3°C higher than 1991–2020 and 4.5°C higher than 1961–1990.
- The UK's average lowest minimum temperature over the most recent decade 2015–2024 was 0.4°C higher than 1991–2020 and 3.9°C higher than 1961–1990.
- The number of days with temperature anomalies exceeding the 1961–1990 average by 5°C has doubled, by 8°C has trebled, and by 10°C has quadrupled for the most recent decade 2015–2024.
- The UK's climate has become steadily wetter since the 1980s, due to an increase in October to March) rainfall. Observations suggest a slight increase in heavy rainfall across the UK in recent decades.
- Six of the 10 wettest October to March time periods have occurred in the 21st Century so far, with October 2023 to March 2024 the wettest winter half-year on record of 827mm.
- October to March rainfall for the most recent decade 2015–2024 has been 6% wetter than 1991–2020 and 16% wetter than 1961–1990, compared to little change for April to September.
- 2024 was the UK's 13th wettest year in the series from 1836 with 109% of average rainfall, the sixth wettest winter (December to February), and the sixth wettest spring (March to May).
- The UK annual mean wind speed from 1969 to 2024 shows a downward trend, consistent with that observed globally.
- Nine named storms hit the UK in 2024. Red warnings were issued for Isha in January and Darragh in December, in comparison to 12 named storms in 2023.

#### LOCAL CONTEXT

##### Rainfall and Temperature

3.1.3. **Table 3-1** presents the long-term average (1991 – 2020) seasonal rainfall (mm), long term average, maximum and minimum seasonal temperature (°C), and the long-term seasonal sunshine (hours) for the local climate station (Charlwood station), the region (England SE & Central S), and the

UK. **Error! Bookmark not defined.** The summer season comprises the months of June, July and August. Winter season comprises the months of January, February and December.

**Table 3-1 - Local, regional and national temperature, sunshine hours and rainfall baseline**

Variable	Season	Location		
		Charlwood Climate Station	England SE & Central S	UK
Long term average seasonal rainfall	Summer	165.8 mm	170.42 mm	253.41 mm
	Winter	250.8 mm	234.38 mm	344.87 mm
Long term average mean seasonal temperature	Summer	16.7°C	16.6°C	14.6°C
	Winter	4.8 °C	5.1°C	4.1°C
Long term average maximum temperature	Summer	22.2 °C	21.4 °C	18.9°C
Long term average minimum temperature	Winter	1.6°C	2.0°C	1.3°C
Long term seasonal sunshine	Summer	624.7 hours	628.3 hours	506.5 hours
	Winter	174.7 hours	194.1 hours	162.2 hours

- 3.1.4. The data indicates that the local climate is drier in both summer and winter compared to the UK average rainfall yet closely aligns with regional climate patterns. The Charlwood climate station recorded 5 mm less rainfall in summer and 16 mm more in winter relative to the England SE & Central S region.
- 3.1.5. Local maximum summer temperatures are comparable to regional values but are 2.5°C higher than the UK average. Winter minimum temperatures are similar to both the UK and regional averages. The area experience 128 more hours of sunshine than the UK average. Being in Southern England, the region is influenced by continental weather patterns from mainland Europe, which can bring hot and humid conditions during summer.

**Snow**

- 3.1.6. Snowfall is closely linked with temperature, with falls rarely occurring if the temperature is higher than 4°C. In the local area, snowfall is normally confined to the months including and between November to April, but upland areas may have brief falls in October and May. Snow rarely lies outside the period from December to March. On average, the number of days with snow falling is about 12-15 per year over the lower lying areas but about 20 days over the higher ground of the Chilterns, North Downs and Weald (**Ref 1.11**).

**Wind**

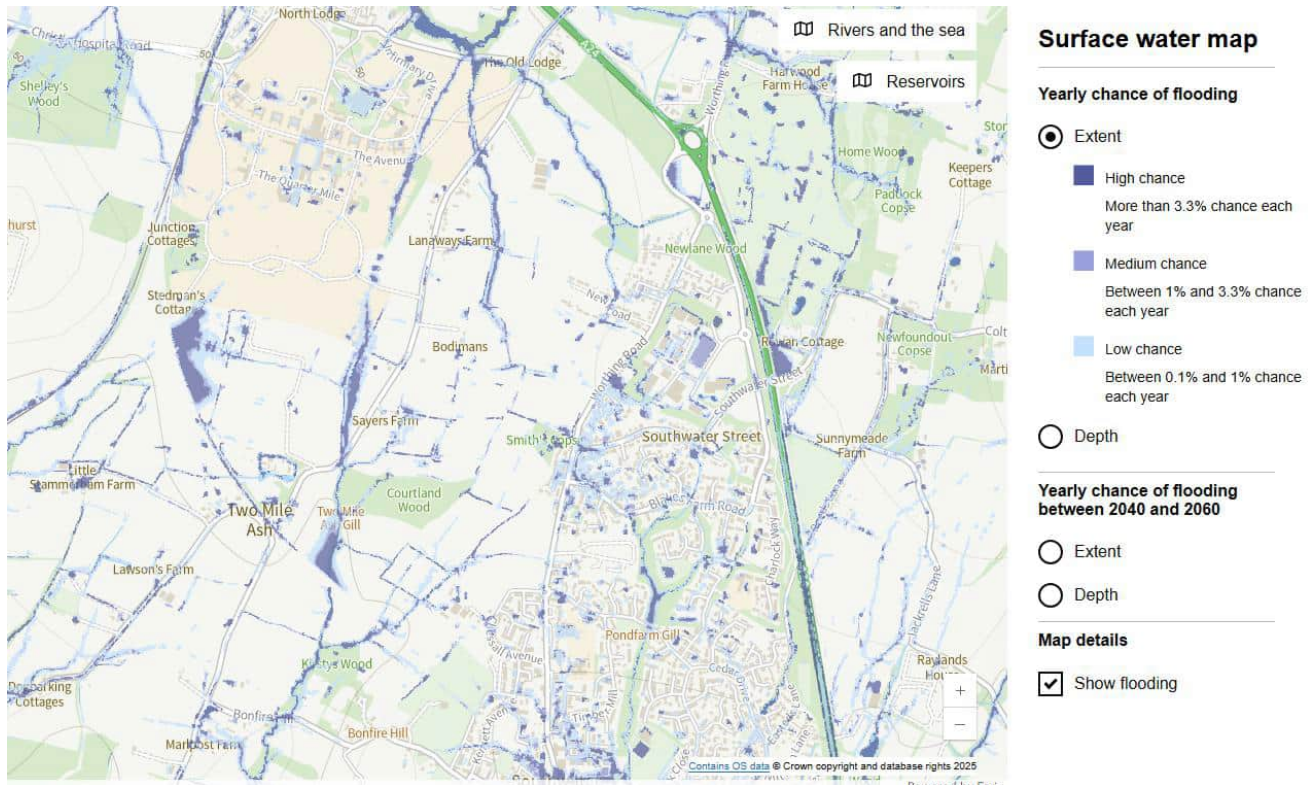
- 3.1.7. The local area is one of the more sheltered parts of the UK, the windiest areas being in western and northern Britain, closer to the Atlantic. The strongest winds are associated with the passage of deep areas of low pressure close to or across the UK. The frequency and strength of these depressions is greatest in the winter half of the year, especially from December to February, and this is when mean speeds and gusts (short duration peak values) are strongest.

## Humidity

3.1.8. The annual average relative humidity in the vicinity of the Proposed Development is 82-84%.

## Flood Risk

3.1.9. Data from the Environment Agency indicate that the Proposed Development is not in a location at risk of flooding from rivers or the sea. The surface water flood map, presented in **Figure 3-1**, indicates that the Proposed Development has sporadic areas at high chance of yearly flooding (more than 3.3% chance each year), likely to be associated with the local topography (**Ref 1.12**).



**Figure 3-1 - Yearly chance of flooding from surface water**

## Past major events

3.1.10. January 2025: In January 2025, severe stormy weather caused flooding, fallen trees, and transport disruptions across Sussex including Horsham. The Environment Agency issued 22 flood alerts in the region. Fallen trees had blocked the A264 Horsham Road and the B2036 London Road in Crawley (**Ref 1.13**).

3.1.11. September 2023: In early September the UK experienced a significant heatwave with daily maximum temperatures exceeding 30°C, across south-east England for seven consecutive days from the 4th to 10th of September and reaching 31 to 32°C across south-east England. On the 10th of September, Faversham (Kent) recorded 33.5°C, making this, unusually, the hottest day of the year. The heat and humidity made uncomfortable conditions for the elderly and vulnerable, and difficult conditions for sleeping at night (**Ref 1.14**).

3.1.12. February 2021: Storm Darcy brought some strong winds and heavy snow to parts of south-east England on 7th, while persistent snow showers resulted in significant accumulations across eastern

England, including the areas of Horsham. Snow and ice caused widespread travel disruption, with roads closed across many eastern coastal counties; Kent and Essex were particularly affected by deep snow. Hazardous conditions made driving conditions difficult with several accidents (**Ref 1.15**).

## 3.2 FUTURE CLIMATE PROJECTIONS

3.2.1. Climate change is projected to lead to warmer wetter winters and hotter drier summers, with an increase in the intensity and frequency of extreme events such as heatwaves, drought, extreme rainfall leading to flash flooding, storms and wind events. The information presented below illustrates how the climate may evolve at the Proposed Development location by the end of the century.

### Rainfall and Temperature

3.2.2. **Table 3-2** provides an overview of current and projected summer and winter temperature and rainfall for the for the Local Authority of Horsham, the nearest land data. Data is presented for 50th percentile with the 10th and 90th percentile values shown in brackets. Values should be considered as positive values, unless prefixed by a '-' denoting a negative value.

**Table 3-2 - Temperature and rainfall climate projection data (anomalies)**

Climate Variable	Model Reference (1981-2010)	Current Baseline (1991-2020)	RCP 8.5 50 <sup>th</sup> percentile (10 <sup>th</sup> – 90 <sup>th</sup> )			Direction of climate trend
			2030s	2050s	2080s	
Average summer temperature (°C change from model reference)	16.5°C	16.7°C	1.6 °C (0.6°C to 2.5 °C)	2.8°C (1.4°C to 4.2 °C)	5.5°C (3 °C to 8°C)	↑
Average winter temperature (°C change from model reference)	4.5°C	4.8°C	1°C (0.3°C to 1.8°C)	1.7°C (0.6°C to 2.3°C)	3.2°C (1.3°C to 5.2°C)	↑
Min winter temperature (°C change from model reference)	1.3°C	1.6°C	1°C 0.2°C to 2°C)	1.9°C (0.5°C to 3.3°C)	3.3°C (1.2°C to 5.8°C)	↑
Max summer temperature (°C change from model reference)	22°C	22.2°C	1.8°C (0.5°C to 2.9°C)	3.2°C (1.4°C to 5°C)	6°C (2.9°C to 9.2°C)	↑
Average summer rainfall (% change from model reference)	156 mm	165.8 mm	-11% (-28.1 % to 6.1 %)	-20.3% (-45.3% to 0.2%)	-36.7% (-63.65 to -8.26%)	↓
Average winter rainfall (% change from model reference)	230 mm	250.8 mm	9.7% (-2% to 22.3%)	14.8% (-1.4% to 34.2%)	28.1% (3% to 59.6%)	↑

3.2.3. Indicators of climate risk are shown in **Table 3-3**. These provide an indication of sector specific thresholds which are projected to change in the future. The indicators presented in **Table 3-3** are provided against the model reference period of 1981-2010. These indicators are unavailable for the current baseline period (1991-2020). Data is presented for 50th percentile with the 10th and 90th percentile values shown in brackets. Values should be considered as positive values, unless prefixed by a ‘-’ denoting a negative value.

**Table 3-3 - Future projections (absolute) of climate risk indicators**

Climate Variable	Model Reference (1981-2010)	RCP 8.5			Direction of climate trend
		2030s	2050s	2080s	
Met office heatwave (events per year)	0.78	2 (1.1 to 3.1)	3.4 (1.6 to 4.8)	4.5 (3 to 5.8)	↑
Road accident risk (days per year)	52.3	38.9 (30 to 47.6)	29.3 (18.8 to 41.9)	17.3 (7.1 to 33)	↓
Road melt risk (days per year)	15.9	31.7 (21.1 to 45.1)	50 (28.8 to 74)	84.6 (48.4 to 114.6)	↑
Heat stress (days per year)	0.16	1.01 (0.4 to 2.1)	3.1 (1.0 to 7.3)	13.8 (3.9 to 34.5)	↑
Wildfire risk (days per year)	16.7	30.7 (18 to 48)	44.8 (23 to 72.8)	75.4 (36.5 to 110.5)	↑
Soil Moisture(% change)	NA	-4.5% (-6.8% to 0.9%)	-6.4% (-9.9% to -2%)	-9.4% (-13.9% to -3.9%)	↓

Notes:

Heatwave: A UK heatwave threshold is met when a location records a period of at least three consecutive days with daily maximum temperatures meeting or exceeding the heatwave temperature threshold. The heatwave threshold of the region is 27°C

Climate Variable	Model Reference (1981-2010)	RCP 8.5			Direction of climate trend
		2030s	2050s	2080s	
Heat stress: Days with shade Wet Bulb Globe Temperature (WBGT) above 25°C Road melt risk: Days with maximum temperature above 25°C Road accident risk: Days with minimum temperature below 0°C Wildfire: Days with Met Office Wildfire Index at the Very High Fire Severity level or above Soil Moisture: change in average seasonal soil moisture content.					

### Snow

3.2.4. With regards to future changes, rising winter temperatures are likely to reduce the amount of precipitation that falls as snow in winter. Snowfall data is unavailable for the probabilistic projections (25km), however both the regional (12km) and the local (2.2km) show a decrease in both falling and lying snow across the UK for the period of 2061-2080 relative to the 1981-2000 baseline.

### Wind

3.2.5. UKCP18 (**Ref 1.9**) depicts a wide spread of future changes in mean surface wind speed, however, there is large uncertainty in projected changes in circulation over the UK and natural climate variability contributes to much of this uncertainty. It is therefore difficult to represent regional extreme winds and gusts within regional climate models.

3.2.6. Central estimates of change in mean wind speed for the 2050s are small in all ensemble runs (<0.2ms<sup>-1</sup>). A wind speed of 0.2ms<sup>-1</sup> (approximately 0.4 knots) is small compared with the typical magnitude of summer mean wind speed of about 3.6–5.1ms<sup>-1</sup> (7 – 10 knots) over much of the UK. Seasonal changes at individual locations across the UK lie within the range of –15% to +10%.

3.2.7. Studies relating to future projections of storms suggest that climate driven storm changes are less distinct in the northern than southern hemisphere (**Ref 1.16**). However, such is the wide range of inter-model variation, robust projections of changes in storm track are not yet possible and there is low confidence in the direction of future changes in the frequency, duration or intensity of storms affecting the UK.

### Humidity

3.2.8. Relative humidity is a function of air temperatures and water vapour content. High humidity levels can result in increased mould and bacteria impacting health and increase corrosion, warping and swelling of building fabric. Lower humidity levels can increase allergies and spread of illness and can cause cracking in flooring and furniture. Projections for seasonal relative humidity indicates a decreasing trend across summer and winter, with the greatest reduction in summer humidity levels, as shown in **Table 3-4 (Ref 1.9)**. Humidity projection data is not published for the 2080s.

**Table 3-4 - Changes in relative humidity**

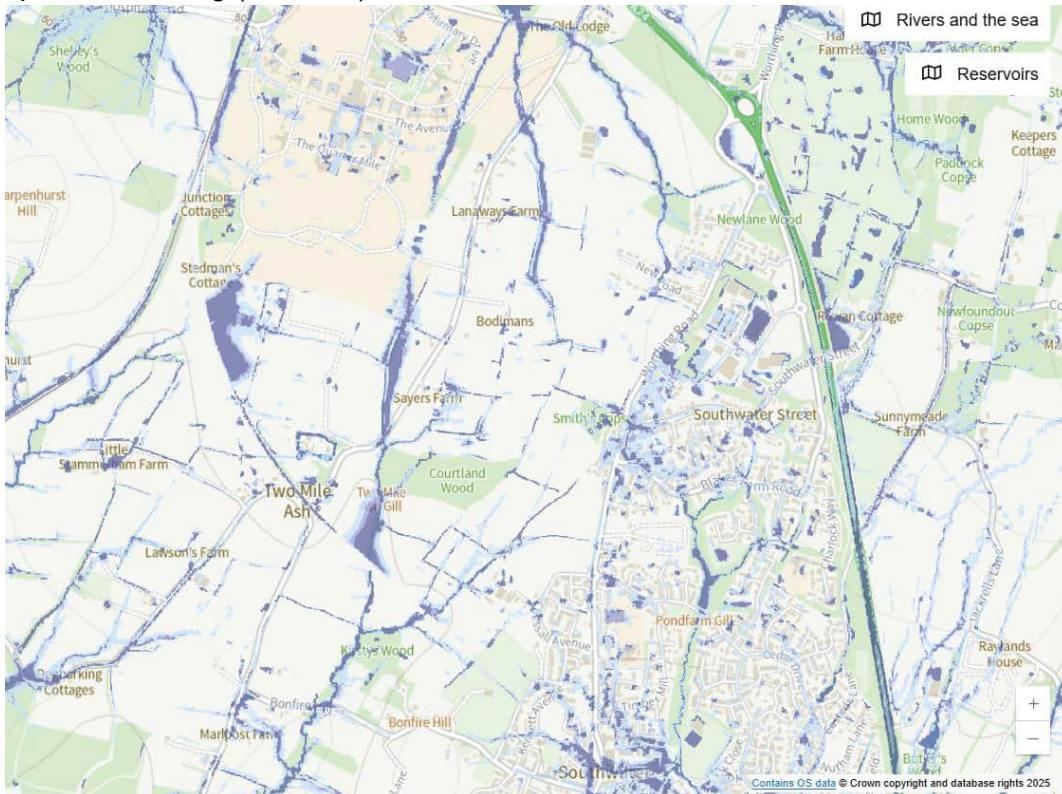
Season	RCP8.5	
	2030s	2050s
Winter	-0.4% (-2.0% to 1.4%)	-0.6% (-2.3% to 1.2%)
Summer	-5.5% (-10.8% to -0.5%)	-9% (-14.4% to -3.6%)

### Slope Failure

3.2.9. Datasets from the GeoIndex onshore from British Geological Survey indicate that the risk of slope failure or landslide is low (improbable) for 2030, 2050 and 2080. The Site is within the low risk area (Ref 1.17).

### Flood Risk

3.2.10. Data from the Environment Agency indicates there is no change in the yearly chance of flooding from rivers and sea in the future timeframes (2036 and 2069). The yearly chance of surface water flooding across the Site between 2040 and 2060 is depicted in **Figure 3-2**, and is similar in terms of spatial spread over the Site to the current conditions (**Figure 3-1**), where there is evidence of sporadic flooding (Ref 1.12).



**Figure 3-2 – Yearly chance of flooding between 2040 and 2060 from surface water**

## 3.3 CLIMATE TRENDS

3.3.1. Based on the current climate baseline and the future climate projections, the climate trends and hazards can be summarised as shown in **Table 3-5**. The level of confidence in the climate science and projection data is provided for each time period.

**Table 3-5 - Climate trends**

Climate Parameter	Climate Trend Description	Trend Confidence	Climate Hazard
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		2030	2050	2080	
Temperature	Increase in average summer temperatures	High	High	High	Increased growing season and vegetation growth
	Increase in the frequency and intensity of hot days and prolonged hot spell events	High	High	High	Hotter days and nights
		High	High	High	Increase intensity of sun glare and UV
	Increasing frequency and intensity of hot and dry conditions	High	High	High	Wildfire events
Humidity	Changes in relative humidity	Low	Low	Low	Decrease in relative humidity (summer)
	Increase in frequency and intensity of hot days and increase in relative humidity	Moderate	High	High	Increase in the number of heat stress days
Precipitation	Decrease in summer rainfall and/or prolonged dry spells	Low	Moderate	High	Reduced water availability
	Increased frequency, volume and/or duration of extreme precipitation events	Low	Low	Moderate	Heavy rainfall Flooding (fluvial, pluvial and standing water)
	Changes in soil moisture content coupled with increasing frequency and intensity of hot days	High	High	High	Ground movement and instability
Wind	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust storms and blizzards	Low	Low	Low	Lightning and lightning strikes
		Low	Low	Low	High winds

## 4 VUNERABILITY ASSESSMENT

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4.1.1. The vulnerability assessment is presented in **Table 4-2**. The key findings of the assessment are summarised here.

### Climate Hazards

4.1.2. According to climate projection data, the severity of most climate hazards is expected to increase over time, resulting in higher hazard ratings. Ground movement and instability remain consistently very low across all time periods. In the short term, most hazards are rated low, with the exception of reduced water availability, which is rated high.

4.1.3. By the medium term (2050s), hotter days and nights, as well as wildfire events, are rated as high hazards, with reduced water availability increasing to a very high hazard.

4.1.4. In the 2080s, climate hazards relating to increased intensity of sun glare and UV radiation, heavy rainfall and increase in the number of heat stress days are rated as high. Very high hazard ratings relate to hotter days and nights, wildfire events and reduced water availability.

### Sensitivity

4.1.5. Proposed Development components with the highest sensitivity to climate hazards comprise:

- Construction workers and end users to an increase in the number of heat stress days;
- Construction site, plant and equipment and workers, dwellings, gypsy and traveller pitches, landscaping and open space and end users to Flooding (fluvial, pluvial and standing water);
- Construction site, plant and equipment and workers, dwellings, commercial, schooling and leisure facilities, new road improvements and end users to ground movement and instability;
- Construction site, plant and equipment and workers, dwellings, commercial, schooling and leisure facilities and end users to hotter days and nights; and
- Gypsy and traveller pitches landscaping and open space and end users to heavy rainfall.

### Design measures

4.1.6. At the current stage of the design, adaptive measures to build resilience to climate change are limited. The vulnerability assessment has been based on the adoption of legislative requirements and good practice measures which include:

- Adherence to Construction (Design and Management) and Health and Safety at Work regulations with regard to managing adverse or severe weather conditions. Principal Contractor will develop and implement a Construction Environmental Management Plan.
- Assets designed to appropriate UK or international standards.
- Grounding and earthing measures incorporated into design.
- Firefighting is handled by Local Fire and Rescue Service.
- Connection to water mains of Horsham in accordance with utility supplier agreement.
- A Flood Risk Assessment and Surface Water Drainage Strategy will be developed and inform the design.
- All proposed drainage will be designed in accordance with local policy, local SuDS guidance, national standards and best practice where applicable during detailed design stages and will inform the design of the Proposed Development.

- Rainwater will be managed through using a well-designed Sustainable Urban Drainage System.

### Vulnerability Assessment

- 4.1.7. The vulnerability assessment for the construction phase components (construction site, plant, equipment and workers) resulted in only 'Very Low' and 'Low' vulnerabilities, due to the construction phase taking place in the short term, and the implementation of measures to build resilience to adverse and severe weather-related events. In line with the methodology of the CRRR Vulnerability Assessment, the construction phase components do not require any further assessment.
- 4.1.8. Proposed Development components with 'Moderate', 'High' or 'Very High' vulnerability will require further assessment in the CRRR Impact Risk Assessment. In the short term (2030s), there are no 'High' or 'Very High' vulnerabilities, however five 'Moderate' vulnerabilities were identified. These related to hotter days and nights for the dwellings, commercial, schooling and leisure facilities, gypsy and traveller pitches, landscaping and open space, new road improvements and end users.
- 4.1.9. By the 2050s, the vulnerability rating for hotter days and nights had increased from 'Moderate' to 'High' for dwellings, commercial, schooling and leisure facilities and end users. Other 'Moderate' vulnerabilities in the 2050s related to:
- The intensity of sun glare and UV, reduced water availability and high winds are 'Moderate' vulnerability for dwellings, commercial, schooling and leisure facilities, gypsy and traveller pitches, landscaping and open space and end users;
  - The intensity of sun glare and UV and hotter days and nights are a 'Moderate' vulnerability for new road improvements; and
  - The increased growing season and vegetation growth, and hotter days and nights are 'Moderate' vulnerability for gypsy and traveller pitches, landscaping, and open space.
- 4.1.10. By the 2080s, 'High' vulnerability remained for the three Proposed Development component-climate hazard combinations identified in the 2050s, with the addition of a 'High' vulnerability for the increase in the number of heat stress days for end users.
- 4.1.11. Twenty-one 'Moderate' vulnerabilities were assigned in the 2080s. These included those identified in the 2050s, with the addition of:
- Wildfire events affecting dwellings, commercial, schooling and leisure facilities, gypsy and traveller pitches, landscaping and open space, new road improvements and end users.
- 4.1.12. Overall, of the 68 Proposed Development component and climate hazard combinations, 28 were identified as having 'Moderate' or 'High' vulnerability and will be taken forward for further assessment at the CRRR Impact Risk Assessment, which will be developed to support the ES stage of the EIA as shown in **Table 4-1**.

**Table 4-1 - Summary of moderate and high vulnerabilities in the 2030s, 2050s and 2080s**

Proposed Development component	Climate hazard		
	2030s	2050s	2080s
<b>Dwellings</b>	<p><b>Moderate vulnerability:</b> Hotter days and nights</p>	<p><b>Moderate vulnerability:</b> Increase intensity of sun glare and UV Reduced water availability High winds</p> <p><b>High vulnerability:</b> Hotter days and nights</p>	<p><b>Moderate vulnerability:</b> Increase intensity of sun glare and UV Reduced water availability Wildfire events High winds</p> <p><b>High vulnerability:</b> Hotter days and nights</p>
<b>Commercial, schooling and leisure facilities</b>	<p><b>Moderate vulnerability:</b> Hotter days and nights</p>	<p><b>Moderate vulnerability:</b> Increase intensity of sun glare and UV Reduced water availability High winds</p> <p><b>High vulnerability:</b> Hotter days and nights</p>	<p><b>Moderate vulnerability:</b> Increase intensity of sun glare and UV Reduced water availability Wildfire events High winds</p> <p><b>High vulnerability:</b> Hotter days and nights</p>
<b>Gypsy and traveller pitches, landscaping and open space</b>	<p><b>Moderate vulnerability:</b> Hotter days and nights</p>	<p><b>Moderate vulnerability:</b> Increased growing season and vegetation growth Hotter days and nights</p>	<p><b>Moderate vulnerability:</b> Increased growing season and vegetation growth Hotter days and nights</p>

Proposed Development component	Climate hazard		
	2030s	2050s	2080s
		Increase intensity of sun glare and UV Reduced water availability High winds	Increase intensity of sun glare and UV Reduced water availability High winds Wildfire events
New road improvements	<b>Moderate vulnerability:</b> Hotter days and nights	<b>Moderate vulnerability:</b> Increase intensity of sun glare and UV Hotter days and nights	<b>Moderate vulnerability:</b> Increase intensity of sun glare and UV Hotter days and nights Wildfire events
End Users	<b>Moderate vulnerability:</b> Hotter days and nights	<b>Moderate vulnerability:</b> Increase intensity of sun glare and UV Reduced water availability High winds <b>High vulnerability:</b> Hotter days and nights	<b>Moderate vulnerability:</b> Increase intensity of sun glare and UV Reduced water availability Wildfire events High winds <b>High vulnerability:</b> Increase in the number of heat stress days Hotter days and nights

## Impact Identification

- 4.1.13. Where 'Moderate' or 'High' vulnerabilities have been identified from the vulnerability assessment, potential climate-related impacts have been identified within the risk register. These include:
- High temperatures can expand, melt and deform building fabric, and increased solar radiation can hasten material deterioration.
  - Overheating, glare and UV exposure creates uncomfortable living and working conditions.
  - Increased risk of heat-related health impacts on residents, employees, visitors and contractors.
  - Damage to buildings and roads from wildfire and increased safety concerns for end users.
  - Damage to dwellings and buildings from high winds or flying debris and increased risk of injury to end users.
  - Disruption of daily activities and services from reduced water availability.
  - Loss of vegetation and landscaped areas and increased maintenance requirements and costs for managing landscaped areas.
- 4.1.14. These impacts will be assessed for the likelihood of occurring and consequence if they did occur as part of the CRRR Impact Risk Assessment delivered to support the ES.
- 4.1.15. The vulnerability assessment is presented in **Table 4-2**.

**Table 4-2 – Vulnerability assessment**

Proposed Development Component	Climate Trend	Climate Hazard	Hazard 2030s	Hazard 2050s	Hazard 2080s	Exposure	Sensitivity	Design measures	Effectiveness of measures	Vulnerability 2030s	Vulnerability 2050s	Vulnerability 2080s	Impact
Construction site, plant and equipment and workers	Increase in average summer temperatures	Increased growing season and vegetation growth	Low	n/a	n/a	No	n/a		n/a	0 / Not Applicable	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
Construction site, plant and equipment and workers	Increase in frequency and intensity of hot days and increase in relative humidity (wet bulb temperature)	Increase in the number of heat stress days	Very Low	n/a	n/a	Yes	High	Adherence to Construction (Design and Management) and Health and Safety at Work regulations with regard to managing adverse or severe weather conditions Principal Contractor will develop and implement a Construction Environmental Management Plan	Very High	Very Low	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
Construction site, plant and equipment and workers	Increase in the frequency and intensity of hot days and prolonged hot spell events	Hotter days and nights	Moderate	n/a	n/a	Yes	High	Adherence to Construction (Design and Management) and Health and Safety at Work regulations with regard to managing adverse or severe weather conditions Principal Contractor will develop and implement a Construction Environmental Management Plan	Very High	Low	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
Construction site, plant and equipment and workers	Increase in the frequency and intensity of hot days and prolonged hot spell events	Increase intensity of sun glare and UV	Low	n/a	n/a	Yes	Low	Adherence to Construction (Design and Management) and Health and Safety at Work regulations with regard to managing adverse or severe weather conditions Principal Contractor will develop and implement a Construction Environmental Management Plan	Very High	Very Low	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
Construction site, plant and equipment and workers	Increasing frequency and intensity of hot and dry conditions	Wildfire events	Moderate	n/a	n/a	Yes	Moderate	Adherence to Construction (Design and Management) and Health and Safety at Work regulations with regard to managing adverse or severe weather conditions Principal Contractor will develop and implement a Construction Environmental Management Plan	Very High	Very Low	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
Construction site, plant and equipment and workers	Changes in relative humidity	Decrease in relative humidity	Low	n/a	n/a	Yes	Very low	Adherence to Construction (Design and Management) and Health and Safety at Work regulations with regard to managing adverse or severe weather conditions Principal Contractor will develop and implement a Construction Environmental Management Plan	Very High	Very Low	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
Construction site, plant and equipment and workers	Decrease in summer rainfall and/or prolonged dry spells	Reduced water availability	High	n/a	n/a	Yes	Moderate	Adherence to Construction (Design and Management) and Health and Safety at Work regulations with regard to managing adverse or severe weather conditions Principal Contractor will develop	Very High	Low	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability

Proposed Development Component	Climate Trend	Climate Hazard	Hazard 2030s	Hazard 2050s	Hazard 2080s	Exposure	Sensitivity	Design measures	Effectiveness of measures	Vulnerability 2030s	Vulnerability 2050s	Vulnerability 2080s	Impact
								and implement a Construction Environmental Management Plan					
Construction site, plant and equipment and workers	Increased frequency, volume and/or duration of extreme precipitation events	Heavy rainfall	Moderate	n/a	n/a	Yes	Moderate	Adherence to Construction (Design and Management) and Health and Safety at Work regulations with regard to managing adverse or severe weather conditions Principal Contractor will develop and implement a Construction Environmental Management Plan	Very High	Very Low	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
Construction site, plant and equipment and workers	Increased frequency, volume and/or duration of extreme precipitation events	Flooding (fluvial, pluvial and standing water)	Low	n/a	n/a	Yes	High	Adherence to Construction (Design and Management) and Health and Safety at Work regulations with regard to managing adverse or severe weather conditions Principal Contractor will develop and implement a Construction Environmental Management Plan	Very High	Low	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
Construction site, plant and equipment and workers	Increased frequency, volume and/or duration of extreme precipitation events	Ground movement and instability	Very Low	n/a	n/a	Yes	High	Adherence to Construction (Design and Management) and Health and Safety at Work regulations with regard to managing adverse or severe weather conditions Principal Contractor will develop and implement a Construction Environmental Management Plan	High	Very Low	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
Construction site, plant and equipment and workers	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust storms and blizzards.	Lightning and lightning strikes	Low	n/a	n/a	Yes	Low	Adherence to Construction (Design and Management) and Health and Safety at Work regulations with regard to managing adverse or severe weather conditions Principal Contractor will develop and implement a Construction Environmental Management Plan	Very High	Very Low	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
Construction site, plant and equipment and workers	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust storms and blizzards.	High winds	Low	n/a	n/a	Yes	Moderate	Adherence to Construction (Design and Management) and Health and Safety at Work regulations with regard to managing adverse or severe weather conditions Principal Contractor will develop and implement a Construction Environmental Management Plan	Very High	Very Low	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
Dwellings	Increase in average summer temperatures	Increased growing season and vegetation growth	Low	Moderate	Moderate	No	n/a		n/a	0 / Not Applicable	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
Dwellings	Increase in the frequency and intensity of hot days and prolonged hot spell events	Hotter days and nights	Moderate	High	Very High	Yes	High	Assets designed to appropriate UK or international standards	Low	Moderate	High	High	High temperatures can expand, melt and deform building fabric, increasing material deterioration

Proposed Development Component	Climate Trend	Climate Hazard	Hazard 2030s	Hazard 2050s	Hazard 2080s	Exposure	Sensitivity	Design measures	Effectiveness of measures	Vulnerability 2030s	Vulnerability 2050s	Vulnerability 2080s	Impact
Dwellings	Increase in the frequency and intensity of hot days and prolonged hot spell events	Increase intensity of sun glare and UV	Low	Moderate	High	Yes	Moderate	None identified at current design stage	Very Low	Low	Moderate	Moderate	Increased solar radiation can hasten material degradation
Dwellings	Increasing frequency and intensity of hot and dry conditions	Wildfire events	Moderate	High	Very High	Yes	Moderate	Firefighting is handled by Local Fire and Rescue Service	High	Low	Low	Moderate	Damage to buildings from wildfire
Dwellings	Changes in relative humidity	Decrease in relative humidity	Low	Moderate	Moderate	Yes	Very low	None identified at current design stage	Very Low	Low	Low	Low	n/a - Very Low or Low Vulnerability
Dwellings	Decrease in summer rainfall and/or prolonged dry spells	Reduced water availability	High	Very High	Very High	Yes	Moderate	Connection to water mains of Horsham in accordance with utility supplier agreement	High	Low	Moderate	Moderate	Disruption of daily activities and services
Dwellings	Increased frequency, volume and/or duration of extreme precipitation events	Heavy rainfall	Moderate	Moderate	High	Yes	Moderate	Assets designed to appropriate UK or international standards. A Flood Risk Assessment and Surface Water Drainage Strategy will be developed and inform the design All proposed drainage will be designed in accordance with local policy, local SuDS guidance, national standards and best practice where applicable during detailed design stages and will inform the design of the Proposed Development Rainwater will be managed through using a well-designed Sustainable Urban Drainage Systems	Very High	Very Low	Very Low	Low	n/a - Very Low or Low Vulnerability
Dwellings	Increased frequency, volume and/or duration of extreme precipitation events	Flooding (fluvial, pluvial and standing water)	Low	Low	Moderate	Yes	High	Assets designed to appropriate UK or international standards. A Flood Risk Assessment and Surface Water Drainage Strategy will be developed and inform the design All proposed drainage will be designed in accordance with local policy, local SuDS guidance, national standards and best practice where applicable during detailed design stages and will inform the design of the Proposed Development Rainwater will be managed through using a well-designed Sustainable Urban Drainage Systems	Very High	Low	Low	Low	n/a - Very Low or Low Vulnerability
Dwellings	Increased frequency, volume and/or duration of extreme precipitation events	Ground movement and instability	Very Low	Very Low	Very Low	Yes	High	Assets designed to appropriate UK or international standards	Low	Low	Low	Low	n/a - Very Low or Low Vulnerability

Proposed Development Component	Climate Trend	Climate Hazard	Hazard 2030s	Hazard 2050s	Hazard 2080s	Exposure	Sensitivity	Design measures	Effectiveness of measures	Vulnerability 2030s	Vulnerability 2050s	Vulnerability 2080s	Impact
Dwellings	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust storms and blizzards.	Lightning and lightning strikes	Low	Low	Moderate	Yes	Moderate	Grounding and earthing measures incorporated into design	High	Low	Low	Low	n/a - Very Low or Low Vulnerability
Dwellings	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust storms and blizzards.	High winds	Low	Moderate	Moderate	Yes	Moderate	Assets designed to appropriate UK or international standards	Low	Low	Moderate	Moderate	Damage to dwellings and buildings from high winds or flying debris
Commercial, schooling and leisure facilities	Increase in average summer temperatures	Increased growing season and vegetation growth	Low	Moderate	Moderate	No	n/a	n/a	n/a	0 / Not Applicable	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
Commercial, schooling and leisure facilities	Increase in the frequency and intensity of hot days and prolonged hot spell events	Hotter days and nights	Moderate	High	Very High	Yes	High	Assets designed to appropriate UK or international standards	Low	Moderate	High	High	High temperatures can expand, melt and deform building fabric, increasing material deterioration
Commercial, schooling and leisure facilities	Increase in the frequency and intensity of hot days and prolonged hot spell events	Increase intensity of sun glare and UV	Low	Moderate	High	Yes	Moderate	None identified at current design stage	Very Low	Low	Moderate	Moderate	Increased solar radiation can hasten material degradation
Commercial, schooling and leisure facilities	Increasing frequency and intensity of hot and dry conditions	Wildfire events	Moderate	High	Very High	Yes	Moderate	Firefighting is handled by Local Fire and Rescue Service	High	Low	Low	Moderate	Damage to buildings from wildfire
Commercial, schooling and leisure facilities	Changes in relative humidity	Decrease in relative humidity	Low	Moderate	Moderate	Yes	Very low	None identified at current design stage	Very Low	Low	Low	Low	n/a - Very Low or Low Vulnerability
Commercial, schooling and leisure facilities	Decrease in summer rainfall and/or prolonged dry spells	Reduced water availability	High	Very High	Very High	Yes	Moderate	Connection to water mains of Horsham in accordance with utility supplier agreement	High	Low	Moderate	Moderate	Disruption of daily activities and services
Commercial, schooling and leisure facilities	Increased frequency, volume and/or duration of extreme precipitation events	Heavy rainfall	Moderate	Moderate	High	Yes	Moderate	Assets designed to appropriate UK or international standards. A Flood Risk Assessment and Surface Water Drainage Strategy will be developed and inform the design All proposed drainage will be designed in accordance with local policy, local SuDS guidance, national standards and best practice where applicable during detailed design stages and will inform the design of the Proposed Development Rainwater will be managed through using a well-designed	Very High	Very Low	Very Low	Low	n/a - Very Low or Low Vulnerability

Proposed Development Component	Climate Trend	Climate Hazard	Hazard 2030s	Hazard 2050s	Hazard 2080s	Exposure	Sensitivity	Design measures	Effectiveness of measures	Vulnerability 2030s	Vulnerability 2050s	Vulnerability 2080s	Impact
								Sustainable Urban Drainage Systems					
Commercial, schooling and leisure facilities	Increased frequency, volume and/or duration of extreme precipitation events	Flooding (fluvial, pluvial and standing water)	Low	Low	Moderate	Yes	Moderate	Assets designed to appropriate UK or international standards. A Flood Risk Assessment and Surface Water Drainage Strategy will be developed and inform the design All proposed drainage will be designed in accordance with local policy, local SuDS guidance, national standards and best practice where applicable during detailed design stages and will inform the design of the Proposed Development Rainwater will be managed through using a well-designed Sustainable Urban Drainage Systems	Very High	Very Low	Very Low	Very Low	n/a - Very Low or Low Vulnerability
Commercial, schooling and leisure facilities	Increased frequency, volume and/or duration of extreme precipitation events	Ground movement and instability	Very Low	Very Low	Very Low	Yes	High	Assets designed to appropriate UK or international standards	Low	Low	Low	Low	n/a - Very Low or Low Vulnerability
Commercial, schooling and leisure facilities	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust storms and blizzards.	Lightning and lightning strikes	Low	Low	Moderate	Yes	Moderate	Grounding and earthing measures incorporated into design	High	Low	Low	Low	n/a - Very Low or Low Vulnerability
Commercial, schooling and leisure facilities	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust storms and blizzards.	High winds	Low	Moderate	Moderate	Yes	Moderate	Assets designed to appropriate UK or international standards.	Low	Low	Moderate	Moderate	Damage to dwellings and buildings from high winds or flying debris
Gypsy and traveller pitches, landscaping and open space	Increase in average summer temperatures	Increased growing season and vegetation growth	Low	Moderate	Moderate	Yes	Moderate	None identified at the current stage	Very Low	Low	Moderate	Moderate	Increased maintenance requirement and cost for managing landscaped areas
Gypsy and traveller pitches, landscaping and open space	Increase in the frequency and intensity of hot days and prolonged hot spell events	Hotter days and nights	Moderate	High	Very High	Yes	Moderate	None identified at the current stage	Very Low	Moderate	Moderate	Moderate	Loss of vegetation and landscaped areas from prolonged high temperatures
Gypsy and traveller pitches, landscaping and open space	Increase in the frequency and intensity of hot days and prolonged hot spell events	Increase intensity of sun glare and UV	Low	Moderate	High	Yes	Moderate	None identified at current design stage	Very Low	Low	Moderate	Moderate	Loss of vegetation and landscaped areas from high UV exposure

Proposed Development Component	Climate Trend	Climate Hazard	Hazard 2030s	Hazard 2050s	Hazard 2080s	Exposure	Sensitivity	Design measures	Effectiveness of measures	Vulnerability 2030s	Vulnerability 2050s	Vulnerability 2080s	Impact
Gypsy and traveller pitches, landscaping and open space	Increasing frequency and intensity of hot and dry conditions	Wildfire events	Moderate	High	Very High	Yes	Moderate	Firefighting is handled by Local Fire and Rescue Service	High	Low	Low	Moderate	Loss of vegetation and landscaped areas from fire
Gypsy and traveller pitches, landscaping and open space	Changes in relative humidity	Decrease in relative humidity	Low	Moderate	Moderate	Yes	Very low	None identified at current design stage	Very Low	Low	Low	Low	n/a - Very Low or Low Vulnerability
Gypsy and traveller pitches, landscaping and open space	Decrease in summer rainfall and/or prolonged dry spells	Reduced water availability	High	Very High	Very High	Yes	Moderate	Connection to water mains of Horsham in accordance with utility supplier agreement	High	Low	Moderate	Moderate	Loss of vegetation and landscaped areas during drought conditions
Gypsy and traveller pitches, landscaping and open space	Increased frequency, volume and/or duration of extreme precipitation events	Heavy rainfall	Moderate	Moderate	High	Yes	High	Assets designed to appropriate UK or international standards. A Flood Risk Assessment and Surface Water Drainage Strategy will be developed and inform the design All proposed drainage will be designed in accordance with local policy, local SuDS guidance, national standards and best practice where applicable during detailed design stages and will inform the design of the Proposed Development Rainwater will be managed through using a well-designed Sustainable Urban Drainage Systems	Very High	Low	Low	Low	n/a - Very Low or Low Vulnerability
Gypsy and traveller pitches, landscaping and open space	Increased frequency, volume and/or duration of extreme precipitation events	Flooding (fluvial, pluvial and standing water)	Low	Low	Moderate	Yes	High	Assets designed to appropriate UK or international standards. A Flood Risk Assessment and Surface Water Drainage Strategy will be developed and inform the design All proposed drainage will be designed in accordance with local policy, local SuDS guidance, national standards and best practice where applicable during detailed design stages and will inform the design of the Proposed Development Rainwater will be managed through using a well-designed Sustainable Urban Drainage Systems	Very High	Low	Low	Low	n/a - Very Low or Low Vulnerability
Gypsy and traveller pitches, landscaping and open space	Increased frequency, volume and/or duration of extreme precipitation events	Ground movement and instability	Very Low	Very Low	Very Low	Yes	Moderate	None identified at current design stage	Very Low	Very Low	Very Low	Very Low	n/a - Very Low or Low Vulnerability
Gypsy and traveller pitches, landscaping and open space	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust	Lightning and lightning strikes	Low	Low	Moderate	Yes	Low	Grounding and earthing measures incorporated into design	High	Low	Low	Low	n/a - Very Low or Low Vulnerability

Proposed Development Component	Climate Trend	Climate Hazard	Hazard 2030s	Hazard 2050s	Hazard 2080s	Exposure	Sensitivity	Design measures	Effectiveness of measures	Vulnerability 2030s	Vulnerability 2050s	Vulnerability 2080s	Impact
	storms and blizzards.												
Gypsy and traveller pitches, landscaping and open space	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust storms and blizzards.	High winds	Low	Moderate	Moderate	Yes	Moderate	None identified at current design stage	Very Low	Low	Moderate	Moderate	Loss of vegetation, trees and landscaped areas from high winds
New road improvements	Increase in average summer temperatures	Increased growing season and vegetation growth	Low	Moderate	Moderate	No	n/a		n/a	0 / Not Applicable	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
New road improvements	Increase in the frequency and intensity of hot days and prolonged hot spell events	Hotter days and nights	Moderate	High	Very High	Yes	Moderate	Assets designed to appropriate UK or international standards	Low	Moderate	Moderate	Moderate	High temperatures can melt and deform surfaces, increasing material deterioration
New road improvements	Increase in the frequency and intensity of hot days and prolonged hot spell events	Increase intensity of sun glare and UV	Low	Moderate	High	Yes	Moderate	None identified at current design stage	Very Low	Low	Moderate	Moderate	Increased solar radiation can hasten material degradation
New road improvements	Increasing frequency and intensity of hot and dry conditions	Wildfire events	Moderate	High	Very High	Yes	Low	Firefighting is handled by Local Fire and Rescue Service	High	Low	Low	Moderate	Damage to roads from wildfire
New road improvements	Changes in relative humidity	Decrease in relative humidity	Low	Moderate	Moderate	No	n/a	n/a	Very Low	0 / Not Applicable	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
New road improvements	Decrease in summer rainfall and/or prolonged dry spells	Reduced water availability	High	Very High	Very High	No	n/a	n/a	n/a	0 / Not Applicable	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
New road improvements	Increased frequency, volume and/or duration of extreme precipitation events	Heavy rainfall	Moderate	Moderate	High	Yes	Moderate	Assets designed to appropriate UK or international standards. A Flood Risk Assessment and Surface Water Drainage Strategy will be developed and inform the design All proposed drainage will be designed in accordance with local policy, local SuDS guidance, national standards and best practice where applicable during detailed design stages and will inform the design of the Proposed Development. Rainwater will be managed through using a well-designed Sustainable Urban Drainage Systems	Very High	Very Low	Very Low	Low	n/a - Very Low or Low Vulnerability

Proposed Development Component	Climate Trend	Climate Hazard	Hazard 2030s	Hazard 2050s	Hazard 2080s	Exposure	Sensitivity	Design measures	Effectiveness of measures	Vulnerability 2030s	Vulnerability 2050s	Vulnerability 2080s	Impact
New road improvements	Increased frequency, volume and/or duration of extreme precipitation events	Flooding (fluvial, pluvial and standing water)	Low	Low	Moderate	Yes	Moderate	Assets designed to appropriate UK or international standards. A Flood Risk Assessment and Surface Water Drainage Strategy will be developed and inform the design All proposed drainage will be designed in accordance with local policy, local SuDS guidance, national standards and best practice where applicable during detailed design stages and will inform the design of the Proposed Development. Rainwater will be managed through using a well-designed Sustainable Urban Drainage Systems	Very High	Very Low	Very Low	Very Low	n/a - Very Low or Low Vulnerability
New road improvements	Increased frequency, volume and/or duration of extreme precipitation events	Ground movement and instability	Very Low	Very Low	Very Low	Yes	High	Assets designed to appropriate UK or international standards	Low	Low	Low	Low	n/a - Very Low or Low Vulnerability
New road improvements	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust storms and blizzards.	Lightning and lightning strikes	Low	Low	Moderate	Yes	Very low	Grounding and earthing measures incorporated into design	High	Very Low	Very Low	Very Low	n/a - Very Low or Low Vulnerability
New road improvements	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust storms and blizzards.	High winds	Low	Moderate	Moderate	No	n/a	n/a	n/a	0 / Not Applicable	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
End users	Increase in average summer temperatures	Increased growing season and vegetation growth	Low	Moderate	Moderate	No	n/a	n/a	n/a	0 / Not Applicable	0 / Not Applicable	0 / Not Applicable	n/a - Very Low or Low Vulnerability
End users	Increase in frequency and intensity of hot days and increase in relative humidity (wet bulb temperature)	Increase in the number of heat stress days	Very Low	Low	High	Yes	High	None identified at the current stage	Very Low	Low	Low	High	Increased risk of heat-related health impacts on residents, employees, visitors and contractors
End users	Increase in the frequency and intensity of hot days and prolonged hot spell events	Hotter days and nights	Moderate	High	Very High	Yes	High	Assets designed to appropriate UK or international standards	Low	Moderate	High	High	Uncomfortable living and working environments
End users	Increase in the frequency and intensity of hot days	Increase intensity of sun glare and UV	Low	Moderate	High	Yes	Moderate	None identified at current design stage	Very Low	Low	Moderate	Moderate	Glare and UV exposure creates uncomfortable living and working conditions

Proposed Development Component	Climate Trend	Climate Hazard	Hazard 2030s	Hazard 2050s	Hazard 2080s	Exposure	Sensitivity	Design measures	Effectiveness of measures	Vulnerability 2030s	Vulnerability 2050s	Vulnerability 2080s	Impact
	and prolonged hot spell events												
End users	Increasing frequency and intensity of hot and dry conditions	Wildfire events	Moderate	High	Very High	Yes	Moderate	Firefighting is handled by Local Fire and Rescue Service	High	Low	Low	Moderate	Increased risk of fire and safety concerns for end users
End users	Changes in relative humidity	Decrease in relative humidity	Low	Moderate	Moderate	Yes	Very low	None identified at current design stage	Very Low	Low	Low	Low	n/a - Very Low or Low Vulnerability
End users	Decrease in summer rainfall and/or prolonged dry spells	Reduced water availability	High	Very High	Very High	Yes	Moderate	Connection to water mains of Horsham in accordance with utility supplier agreement	High	Low	Moderate	Moderate	Disruption of daily activities and services
End users	Increased frequency, volume and/or duration of extreme precipitation events	Heavy rainfall	Moderate	Moderate	High	Yes	High	Assets designed to appropriate UK or international standards. A Flood Risk Assessment and Surface Water Drainage Strategy will be developed and inform the design All proposed drainage will be designed in accordance with local policy, local SuDS guidance, national standards and best practice where applicable during detailed design stages and will inform the design of the Proposed Development Rainwater will be managed through using a well-designed Sustainable Urban Drainage Systems	Very High	Low	Low	Low	n/a - Very Low or Low Vulnerability
End users	Increased frequency, volume and/or duration of extreme precipitation events	Flooding (fluvial, pluvial and standing water)	Low	Low	Moderate	Yes	High	Assets designed to appropriate UK or international standards. A Flood Risk Assessment and Surface Water Drainage Strategy will be developed and inform the design All proposed drainage will be designed in accordance with local policy, local SuDS guidance, national standards and best practice where applicable during detailed design stages and will inform the design of the Proposed Development Rainwater will be managed through using a well-designed Sustainable Urban Drainage Systems	Very High	Low	Low	Low	n/a - Very Low or Low Vulnerability
End users	Increased frequency, volume and/or duration of extreme precipitation events	Ground movement and instability	Very Low	Very Low	Very Low	Yes	High	Assets designed to appropriate UK or international standards	Low	Low	Low	Low	n/a - Very Low or Low Vulnerability

Proposed Development Component	Climate Trend	Climate Hazard	Hazard 2030s	Hazard 2050s	Hazard 2080s	Exposure	Sensitivity	Design measures	Effectiveness of measures	Vulnerability 2030s	Vulnerability 2050s	Vulnerability 2080s	Impact
End users	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust storms and blizzards.	Lightning and lightning strikes	Low	Low	Moderate	Yes	Moderate	Grounding and earthing measures incorporated into design	High	Low	Low	Low	n/a - Very Low or Low Vulnerability
End users	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust storms and blizzards.	High winds	Low	Moderate	Moderate	Yes	Moderate	Assets designed to appropriate UK or international standards	Low	Low	Moderate	Moderate	Increased risk of injury to end users from flying debris and high winds

## 5 NEXT STEPS

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- 5.1.1. To support the ES, required as the next stage of the EIA, the CCRR will identify potential impacts to the receptors with moderate, high and very high vulnerability to climate hazards. The potential impacts will be assessed against the likelihood of the impacts occurring and the consequence to the Proposed Development if they did occur. Through further engagement with the Design Team the assessment will review and update the known adaptive measures to inform the impact assessment.

## 6 ASSUMPTIONS AND LIMITATIONS

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- 6.1.1. The UKCP18 projections **Error! Bookmark not defined.** have been used to infer future changes in a range of climate variables that may affect the vulnerability of the Proposed Development to climate change. At the time of writing, these represent the most up-to-date representation of future climate in the UK. The Climate Risk Indicator (CRI) has been developed using UKCP18 projections (**Ref 1.9**).
- 6.1.2. There are inherent uncertainties associated with climate projections, and they are not predictions of the future. It is possible that future climate will differ from the future climate against which the Proposed Development has been assessed, depending on global emissions over the next century. A 'high' emissions scenario (RCP 8.5) across short, medium and long term time frames have been used to develop a baseline against which climate change risk has been assessed. The construction phase is considered against the short term timeframes, with the design and operational phase considered against the long term timeframe to align with the anticipated design life of the Proposed Development.
- 6.1.3. Any further research, analysis or decision-making should take account of the accuracies and uncertainties associated with climate projections. It is also important to note that the analysis is based on selected observational data, the results of climate model ensembles and a selected range of existing climate change research and literature available at the time of assessment. Any future decision-making based on this analysis should consider the range of literature, evidence and research available at that time and any changes to this.
- 6.1.4. Some climate hazards are derived from combinations of climate parameters (for example drought and erosion are driven by changes in precipitation and temperature). For the purposes of the assessment climate hazards have been grouped under the primary climate parameter driver.
- 6.1.5. The adaptive capacity of the Proposed Development has been informed through knowledge of the Proposed Development, understanding of legislative requirements and good practice in construction and design, as detailed in **Section 4** Vulnerability Assessment.

## 7 REFERENCES

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- **Reference 1.1:** Intergovernmental Panel on Climate Change (2021) AR6 Annex II Glossary. Available at: [https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC\\_AR6\\_WGII\\_Annex-II.pdf](https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Annex-II.pdf)
- **Reference 1.2:** ISO14091:2021 (2021) Adaptation to climate change – Guidelines on vulnerability, impacts and risk assessment. Available at: <https://www.iso.org/standard/68508.html>
- **Reference 1.3:** HM Government (2017). The Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Available at: <https://www.legislation.gov.uk/ukxi/2017/571/contents>
- **Reference 1.4:** IEMA. (2020). EIA Guide to: Climate Change Resilience and Adaptation
- **Reference 1.5:** ISO 14090:2019 Adaptation to climate change — Principles, requirements and guidelines. Available at: <https://www.iso.org/standard/68507.html>
- **Reference 1.6:** Met Office (2023) UK Climate Averages. Available at: <https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages>
- **Reference 1.7:** Met Office (2016) UK Regional Climates. Available at: <https://www.metoffice.gov.uk/research/climate/maps-and-data/regional-climates/index>
- **Reference 1.8:** Kendon, M. et al. (2025). State of the UK Climate in 2024. International Journal of Climatology, 45(S1). doi:10.1002/joc.70010.
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- **Reference 1.10:** Nigel Arnell et. al. (2021). The Climate Risk Indicators. Available at: <https://uk-cri.org/>
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- **Reference 1.12:** Environment Agency (2025) Check your long term flood risk. Available at: <https://check-long-term-flood-risk.service.gov.uk/map>
- **Reference 1.13:** BBC. (2025). Flooding and fallen trees cause disruption. Available at: <https://www.bbc.co.uk/news/articles/ckg72xjwkdyo>
- **Reference 1.14:** Met office. (2023). Heatwave, September 2023. Available at: [https://weather.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/interesting/2023/2023\\_05\\_september\\_heatwave.pdf](https://weather.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/interesting/2023/2023_05_september_heatwave.pdf)
- **Reference 1.15:** Met office. (2021). Severe winter weather and storm Darcy, February 2021. Available at: [https://weather.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/interesting/2021/2021\\_02\\_low\\_temperatures.pdf](https://weather.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/interesting/2021/2021_02_low_temperatures.pdf)
- **Reference 1.16:** Belcher, S., Slingo, J., Scaife, A., McCarthy, M., Saulter, A., McBeath, K., . . . Parry, S. (2014). The recent storms and floods in the UK. Met Office , 29
- **Reference 1.17:** GeoIndex Onshore (2020). British Geological Survey. Available at: [https://mapapps2.bgs.ac.uk/geoindex/home.html?layer=BGSGeoClimateOpen&\\_ga=2.39225955.1928633744.1726583012-726430774.1726583010](https://mapapps2.bgs.ac.uk/geoindex/home.html?layer=BGSGeoClimateOpen&_ga=2.39225955.1928633744.1726583012-726430774.1726583010)



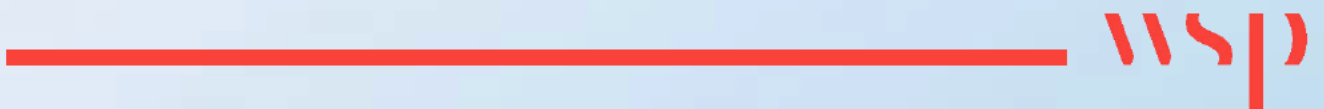
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# Appendix 5.1

## **EPUK AND IAQM INDICATIVE CRITERIA**



## EPUK AND IAQM INDICATIVE CRITERIA FOR REQUIRING AN AIR QUALITY ASSESSMENT

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Guidance produced by Environmental Protection UK (EPUK) and the IAQM for the assessment of air quality for planning applications<sup>1</sup> advises that impacts on air quality could be significant, requiring quantitative assessment, if the following change in traffic flows occurs due a development proposal:

- There is a change in Light Duty Vehicle (LDV) flows of:
  - more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA),
  - more than 500 AADT elsewhere; or,
- There is a change of Heavy Duty Vehicle (HDV) flows of:
  - more than 25 AADT within or adjacent to an AQMA,
  - more than 100 AADT elsewhere.
- Realign roads, i.e. changing the proximity of receptors to traffic lanes.
  - Where the change is 5m or more and the road is within an AQMA.
- Introduce a new junction or remove an existing junction near to relevant receptors.
  - Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
- Introduce or change a bus station - Where bus flows will change by:
  - more than 25 AADT within or adjacent to an AQMA
  - more than 100 AADT elsewhere.
- Have an underground car park with extraction system. The ventilation extract for the car park will be within 20 m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).

EPUK and IAQM guidance<sup>1</sup> also suggests that if the proposals have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors. This includes combustion plant associated with standby emergency generators.

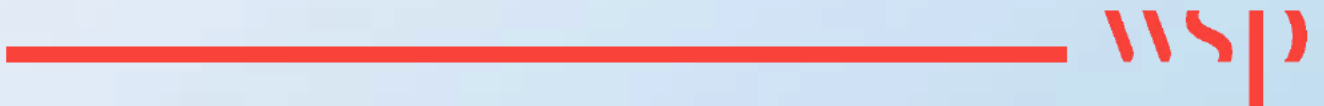
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<sup>1</sup> **Reference. 5.2:** Environmental Protection UK and Institute of Air Quality Management. (2017). *Land Use Planning & Development Control: Planning for Air Quality*. Available from: <http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> [Accessed September 2025].

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# Appendix 5.2

## **LOCAL AUTHORITY AIR QUALITY MONITORING DATA**



## LOCAL AUTHORITY AIR QUALITY MONITORING DATA

HDC local monitoring data for NO<sub>2</sub>, PM<sub>10</sub> and the estimated PM<sub>2.5</sub> are shown in **Table 1**, **Table 2** and **Table 3** respectively.

**Table 1 - Local Authority NO<sub>2</sub> Monitoring Data**

Site Name (ID)	Site Type	Distance to Site (km)	Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> )				
			2019	2020*	2021*	2022	2023
Southwater 1 (49)	Roadside	0.33	23.5	21.1	21.7	19.4	19.0
Horsham 3N (3)	Urban Background	1.8	12.5	9.5	9.9	8.8	7.6
Broadbridge Heath 1 (4)	Roadside	1.3	-	-	-	-	10.2
Horsham 8N (11)	Roadside	1.7	21.9	19.1	20.7	19.9	18.7

‘-’ indicates that monitoring at this location was not undertaken during that year.

\* Monitoring data is not considered to be representative of normal conditions nor when making comparisons of long-term trends due to national lockdown restrictions attributed to the outbreak of the COVID-19 pandemic.

**Table 2 - Local Authority PM<sub>10</sub> Monitoring Data**

Site Name	Site Type	Annual Mean PM <sub>10</sub> Concentration (µg/m <sup>3</sup> ) (and number of days 24-hour mean concentration exceeded 50µg/m <sup>3</sup> concentration) in µg/m <sup>3</sup>				
		2019	2020*	2021*	2022	2023
Horsham Park Way (HO2)	Roadside	19.3 (5)	15.7 (0)	17.5 (0)	19.3 (0)	20.5 (0)

\* Monitoring data is not considered to be representative of normal conditions nor when making comparisons of long-term trends due to national lockdown restrictions attributed to the outbreak of the COVID-19 pandemic.

**Table 3 - Local Authority PM2.5 Monitoring Data**

Site Name	Site Type	Annual Mean PM <sub>2.5</sub> Concentration (µg/m <sup>3</sup> )				
		2019	2020*	2021*	2022	2023
Horsham Park Way (HO2)	Roadside	13.5	11.0	12.3	13.1	14.6

PM<sub>2.5</sub> values for Horsham Park Way were estimated from the PM<sub>10</sub> data using a nationally derived correction multiplying ratio of 0.7 (2019-2021), national factor 6.4 (2022), national factor 5.9 (2023).

\* Monitoring data is not considered to be representative of normal conditions nor when making comparisons of long-term trends due to national lockdown restrictions attributed to the outbreak of the COVID-19 pandemic.

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# Appendix 5.3

## AIR QUALITY FIGURES



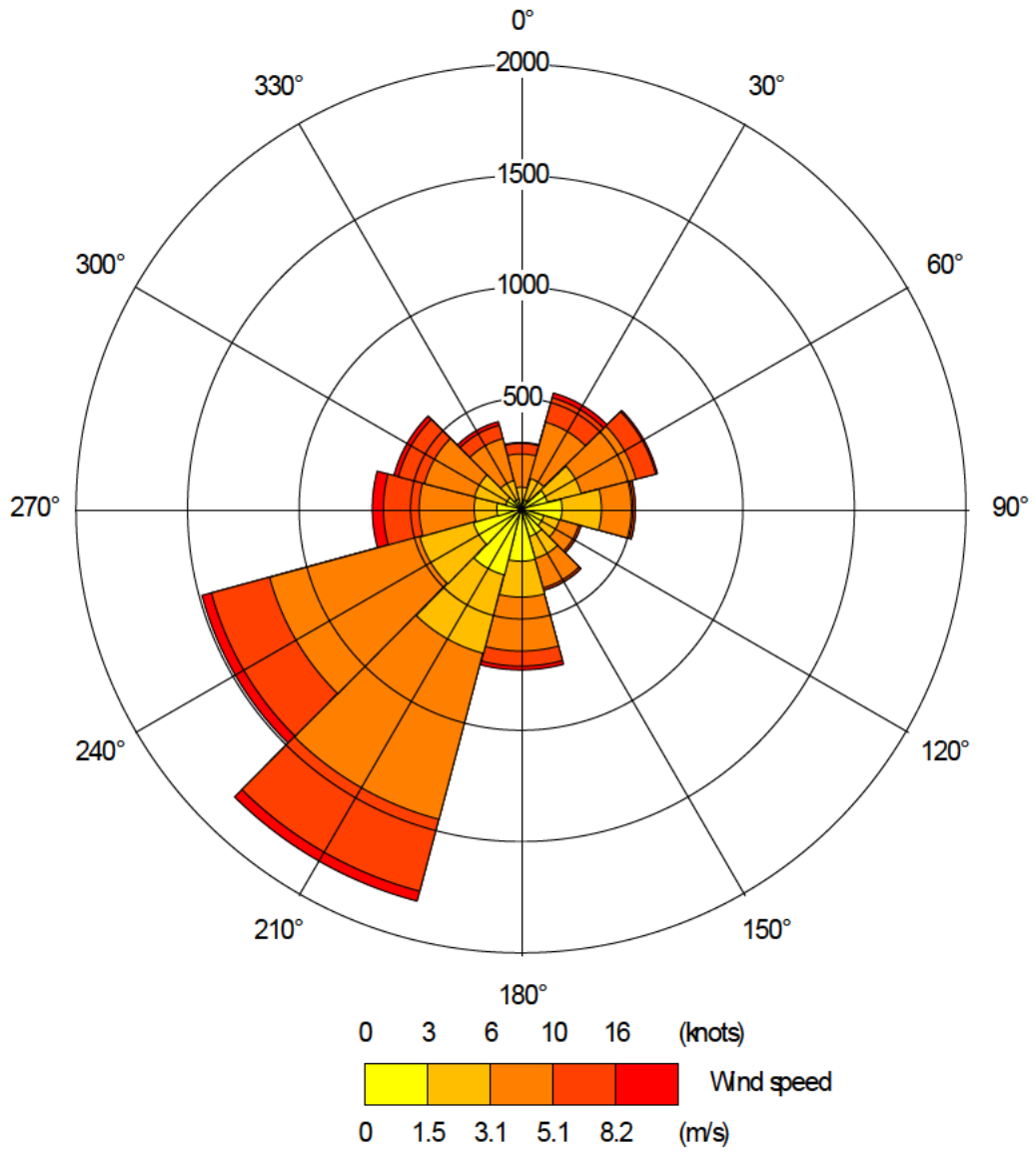
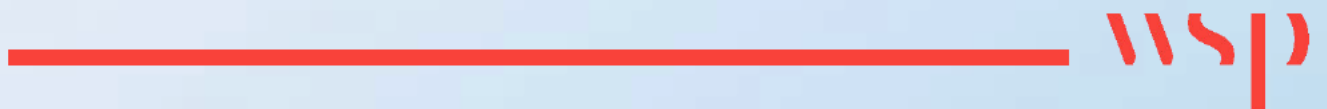


Figure 5-1 Wind Rose for 2024

# Appendix 6.1

## **HERITAGE LEGISLATION, POLICY AND GUIDANCE**



## LEGISLATION, POLICY AND GUIDANCE

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### PROPOSED ASSESSMENT METHODOLOGY/SCOPE OF ASSESSMENT

The assessment will focus on built heritage assets, historic landscape features and below-ground archaeological remains that are likely to be impacted by the Proposed Development.

For both disciplines, the assessment will be undertaken with reference to the following legislation, policy and guidance pertaining to development and the historic environment:

- Planning (Listed Buildings and Conservation Areas) Act 1990<sup>1</sup>;
- National Planning Policy Framework (NPPF), December 2024 (with footnote revisions in February 2025)<sup>2</sup>;
- Relevant local planning policy, guidance and plans, including:

The Horsham District Local Plan 2023 - 2040 (Regulation 19)<sup>3</sup> forms part of the emerging development plan for the district, and the Horsham District Planning Framework (2015)<sup>4</sup> Policy 34: Cultural and Heritage Assets, as well as Policy 2: Strategic Development; Policy 32: The Quality of New Development; and Policy 33: Development Principles; and The Southwater Parish Council Neighbourhood Plan 2019-2031<sup>5</sup>.

- Planning Practice Guidance, live on-line resource<sup>6</sup>;
- Historic Environment Good Practice Advice in Planning Note 2 (GPA2): Managing Significance in Decision-Taking in the Historic Environment, March 2015<sup>7</sup>;

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<sup>1</sup> HM Government (1990). Planning (Listed Buildings and Conservation Areas) Act 1990. Available online: <https://www.legislation.gov.uk/ukpga/1990/9/contents> [Accessed September 2025].

<sup>2</sup> Ministry of Housing, Communities and Local Government (2024). National Planning Policy Framework. MHCLG, London. Available online: [https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF\\_December\\_2024.pdf](https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf) [Accessed September 2025].

<sup>3</sup> Horsham District Council (2023) Local Plan 2023 - 2040 (Regulation 19) [Appendix 1 - Horsham District Local Plan Regulation 19 Dec 2023.pdf](#) [Accessed September 2025].

<sup>4</sup> Horsham District Council (2015). Horsham District Planning Framework (excluding South Downs National Park). Available online: [https://www.horsham.gov.uk/\\_data/assets/pdf\\_file/0016/60190/Horsham-District-Planning-Framework-November-2015.pdf](https://www.horsham.gov.uk/_data/assets/pdf_file/0016/60190/Horsham-District-Planning-Framework-November-2015.pdf) [Accessed August 2025].

<sup>5</sup> Southwater Parish Council (2020). Southwater Neighbourhood Development Plan 2019-2031. Available online: [https://www.horsham.gov.uk/\\_data/assets/pdf\\_file/0007/108619/Southwater-Neighbourhood-Plan-Referendum-Version.pdf](https://www.horsham.gov.uk/_data/assets/pdf_file/0007/108619/Southwater-Neighbourhood-Plan-Referendum-Version.pdf) [Accessed August 2025].

<sup>6</sup> Ministry of Housing, Communities and Local Government (2016) (last updated 2024). Planning practice guidance. Available online: <https://www.gov.uk/government/collections/planning-practice-guidance> [Accessed September 2025].

<sup>7</sup> Historic England (2015). Historic Environment Good Practice Advice in Planning Note 2 (GPA2): Managing Significance in Decision-Taking in the Historic Environment. Available online: <https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/gpa2/> [Accessed September 2025].

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- Historic Environment Good Practice Advice in Planning Note 3 (GPA3): The Setting of Heritage Assets, Second Edition December 2017<sup>8</sup>;
- Historic England Advice Note 2: Making Changes to Heritage Assets (February 2016)<sup>9</sup>;
- Historic England's *Understanding Historic Buildings. A Guide to Good Recording Practice* (May 2016)<sup>10</sup>;
- Historic England's *Farm Buildings and Traditional Farmsteads* guidance (January 2010)<sup>11</sup>;
- Historic England's *National Farmstead Assessment Framework* guidance (March 2015)<sup>12</sup>;
- Historic England's *The Adaptive Reuse of Traditional Farm Buildings* guidance (October 2017)<sup>13</sup>;
- Historic England's *Adapting Traditional Farm Buildings* guidance (October 2017)<sup>14</sup>;
- Historic England's *The Maintenance and Repair of Traditional Farm Buildings* guidance (October 2017)<sup>15</sup> and other Historic England farmstead guidance;
- British Standard 7913:2013 Guide to the Conservation of Historic Buildings<sup>16</sup>; and
- ISEP's (formerly IEMA) Guidance for Landscape and Visual Impact Assessment Third Edition (GLVIA3), 2013<sup>17</sup>.

The NPPF refers to the consideration of the 'significance' of heritage assets. However, in the context of EIA, the term 'significance' relates to the established scale of effect as a result of the combination of the importance/sensitivity of the asset and the magnitude of potential impact on that asset.

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<sup>8</sup> Historic England (2017). Historic Environment Good Practice Advice in Planning Note 3 (GPA3) (Second Edition): The Setting of Heritage Assets. Available online: <https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/> [Accessed September 2025].

<sup>9</sup> Historic England (2016). Historic England Advice Note 2: Making Changes to Heritage Assets. Available online: [historicengland.org.uk/images-books/publications/making-changes-heritage-assets-advice-note-2/heag023-making-changes-to-heritage-assets/](https://historicengland.org.uk/images-books/publications/making-changes-heritage-assets-advice-note-2/heag023-making-changes-to-heritage-assets/) [Accessed September 2025].

<sup>10</sup> Historic England (2016). *Understanding Historic Buildings. A Guide to Good Recording Practice*. Available online: <https://historicengland.org.uk/images-books/publications/understanding-historic-buildings/heag099-understanding-historic-buildings/> [Accessed September 2025].

<sup>11</sup> Historic England (2010). *Farm Buildings and Traditional Farmsteads*. Available online: <https://historicengland.org.uk/advice/caring-for-heritage/rural-heritage/farm-buildings/> [Accessed September 2025].

<sup>12</sup> Historic England (2015). *National Farmstead Assessment Framework*. Available online: <https://historicengland.org.uk/images-books/publications/national-farmstead-assessment-framework/farmsteads-assessment-framework-2015/> [Accessed September 2025].

<sup>13</sup> Historic England (2017). Historic England Advice Note 9: *The Adaptive Reuse of Traditional Farm Buildings*. Available online: [historicengland.org.uk/images-books/publications/adaptive-reuse-traditional-farm-buildings-advice-note-9/heag156-adaptive-reuse-farm-buildings/](https://historicengland.org.uk/images-books/publications/adaptive-reuse-traditional-farm-buildings-advice-note-9/heag156-adaptive-reuse-farm-buildings/) [Accessed September 2025].

<sup>14</sup> Historic England (2017). *Adapting Traditional Farm Buildings*. Available online: [historicengland.org.uk/images-books/publications/adapting-traditional-farm-buildings/heag158-adapting-traditional-farm-buildings/](https://historicengland.org.uk/images-books/publications/adapting-traditional-farm-buildings/heag158-adapting-traditional-farm-buildings/) [Accessed September 2025].

<sup>15</sup> Historic England (2017). *The Maintenance and Repair of Traditional Farm Buildings*. Available online: [historicengland.org.uk/images-books/publications/maintenance-repair-trad-farm-buildings/heag157-maintenance-repair-traditional-farm-buildings/](https://historicengland.org.uk/images-books/publications/maintenance-repair-trad-farm-buildings/heag157-maintenance-repair-traditional-farm-buildings/) [Accessed September 2025].

<sup>16</sup> British Standards Institute (2013). BS 7913:2013 Guide to the conservation of historic buildings.

<sup>17</sup> IEMA (2013). Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA3).

Therefore, to avoid confusion, when referring to the NPPF the term ‘importance’ or ‘sensitivity’ (rather than significance) will be used within the chapter.

There are no over-arching national government guidelines for evaluating the importance of different types of heritage asset, although Historic England have a wide range of heritage subject matter specific advice, including a range of Farmstead guidance.

For archaeological remains, the Department for Digital, Culture, Media and Sport (DCMS) has adopted a series of principal criteria for use in the determination of national importance when scheduling ancient monuments<sup>18</sup>. The criteria include period, rarity, documentation, group value, survival / condition, fragility / vulnerability, diversity and potential and can be used as a basis for the assessment of the importance of heritage sites and remains. However, the document also states that these principles “should not be considered definitive, but as indicators that contribute to a broader judgment based on individual circumstances”.

Listed buildings are nationally designated by the Secretary of State (based on recommendations from Historic England) for their special architectural or historic interest and are identified via the National Heritage List for England<sup>19</sup>. Parish Heritage Assets are designated locally, based upon local criteria which identify built heritage assets which do not meet the requirements for statutory designation, but which retain a local degree of interest. The NPPF and the Planning Practice Guidance introduce criteria for the assessment of the importance of heritage assets and these have been factored into this assessment.

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<sup>18</sup> Department for Culture, Media & Sport (formerly the Department for Digital, Culture, Media and Sport (DCMS)) (2013). Scheduled Monuments & nationally important but non-scheduled monuments. Available online: [https://assets.publishing.service.gov.uk/media/5a7c98eee5274a0bb7cb81d6/SM\\_policy\\_statement\\_10-2013\\_2\\_.pdf](https://assets.publishing.service.gov.uk/media/5a7c98eee5274a0bb7cb81d6/SM_policy_statement_10-2013_2_.pdf) [Accessed September 2025].

<sup>19</sup> Historic England (2025). The National Heritage List for England. Available online: <https://historicengland.org.uk/listing/the-list> [Accessed September 2025].

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# Appendix 8.1

## **LVIA REPRESENTATIVE VIEWS AND METHODOLOGY**



fabrik

# Land West of Southwater, Horsham

Appendix 8.1 - LVIA Representative Views and  
Methodology  
September 2025

# Issue sheet

**Job Name:** Land West of Southwater, Horsham  
**Job number:** D3504  
**Client:** Berkeley Strategic Land Limited  
**Report number:** 0002

Revision	Date	Revision Details	Prepared By	Checked By	Approved By
01	05.09.2025	For Scoping	JB	LS	LS

# Contents

1.0	Introduction	5
2.0	1.0 - LVIA Methodology	6
3.0	2.0 - Representative Viewpoints	11

Project number: D3504  
Version: 01  
Version date: 05/09/2025  
Comment: Draft Report

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# Introduction

## Introduction

fabrik Chartered Landscape Architects have been appointed by Berkeley Strategic Land Limited to carry out a Landscape and Visual Impact Assessment (LVIA) of Land West of Southwater (the 'Site') and its surrounding area, in order to consider, as part of the iterative design process, the likely physical and visual impacts arising as a result of the proposed development.

This document has been prepared to agree the location of the representative views and methodology to be adopted for the LVIA with the Officers at Horsham District Council.

The location of the Site, together with landscape related designations for context is shown on the figure 1.1.

## Methodology

fabrik's full LVIA methodology is set out at section 1, which 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).

## Desktop Research

The desktop survey carried out as part of the LVIA includes the review of Ordnance Survey maps, interactive maps, aerial photography, published landscape character assessment documents, planning policy and the emerging development proposals.

The extent of the baseline and therefore the impact appraisal is broadly defined by the Zone of Theoretical Visibility (ZTV) as determined by the initial desk study and verified in the field and therefore extends to 4km from the centre of the Site. The ZTV mapping is presented on Figure 2.1, at page 13.

The desk top assessment also identifies any changes to the current baseline situation which are likely to be in place prior to the proposed development proceeding.

## Field Work

The field work was carried out on 8th August 2025 and will record the existing landscape elements within the Site; the contextual landscape elements; and identify a series of key visual receptors. The visual assessment will include a photographic survey of the Site taken from a series of key representative viewpoints, chosen to reflect a range of locations including both public and private views, distances and directions around the Site. The proposed viewpoint locations, for Officer consideration and agreement are presented on Figure 2.2, and figure 2.3 on pages 14 and 15.

The weather conditions and camera lense will also be recorded.

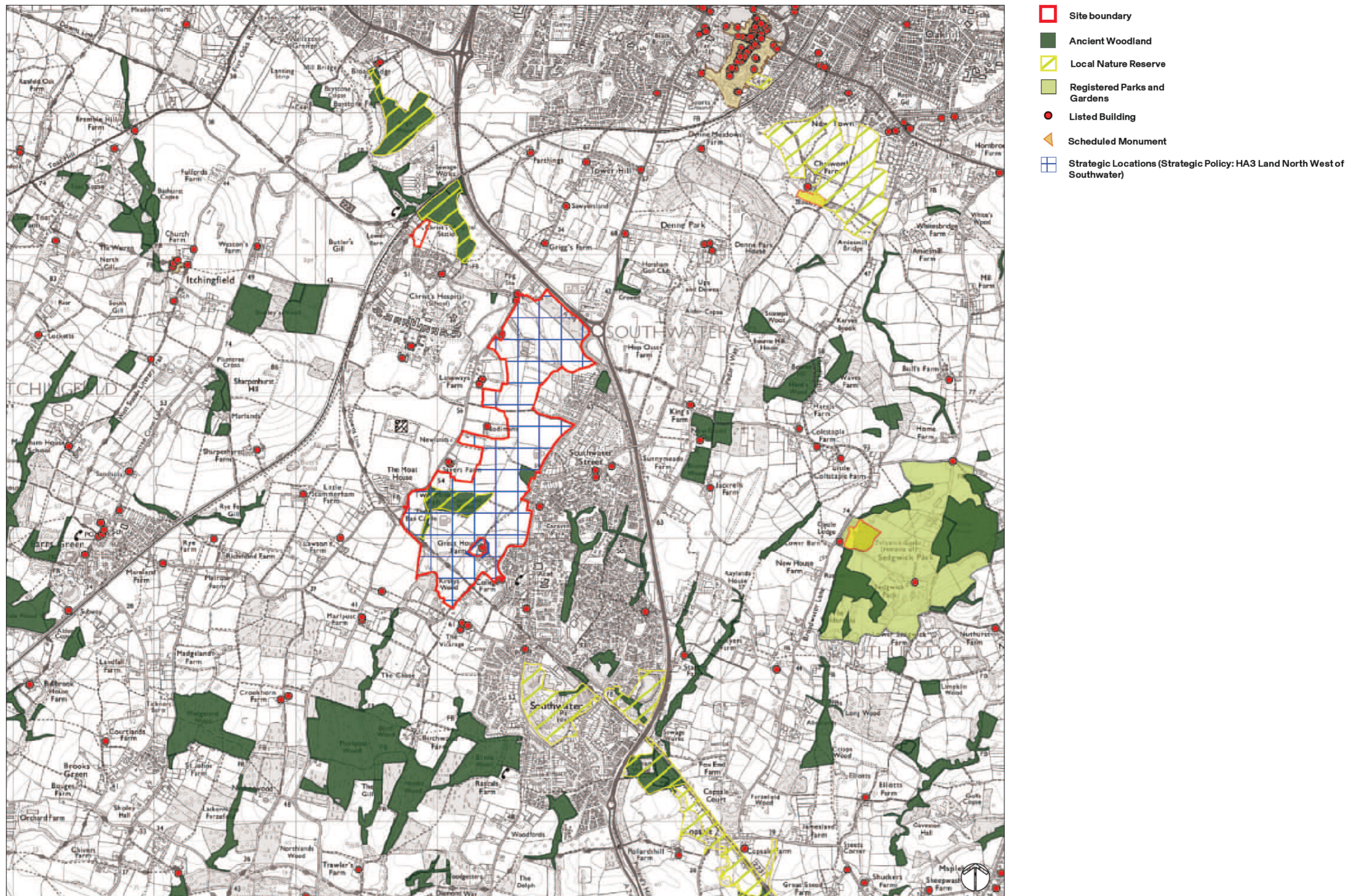


Figure 1.1 - Local landscape related designations (fabrik, 2025)

1.0

**LVIA Methodology**

# LVIA Methodology

## Introduction

The methodology employed in carrying out an LVIA is drawn from the Landscape Institute and the Institute of Environmental Management and Assessment's 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA3) Third Edition (Routledge 2013). The method adopted follows a structured and transparent process, and 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).

An LVIA provides 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 is 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 will be prepared in accordance with Technical Guidance Note 06/19 on Visual Representation of Development Proposals (Landscape Institute, 17 September 2019).

## 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 (ZTV) 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, serial or static views);
- The current and future baseline scenarios; and
- The value of each of the landscape and visual receptors.

Landscape effects derive from either direct or in-direct 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). Residual effects are those at year 15 considering any additional mitigation measures in place over and above those designed in to the scheme.

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

The emphasis is placed on the narrative text describing the landscape and visual effects, and the judgements made about their significance, with tables and matrices used to support and summarise the descriptive text. The criteria and thresholds set out in the methodology are used to inform the assessment of effects. Ranges of criteria and thresholds are used in the assessment where appropriate. Whilst every possible range is not defined in the methodology, each of the thresholds and criteria are clearly explained, and therefore the logic to each range can be traced.

Cumulative effects of all other known development may also be considered.

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

## 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 which will change the characteristics of either the Site or its setting.

A desk study is 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 are used to identify local features relating to geology, soils, landform, drainage, vegetation cover, land use, settlement, the history of the landscape and the way that landscape is experienced, 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 National Landscapes (formerly Areas of Outstanding Natural Beauty), National Parks, Green Belt, 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 unbuilt 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, regional and some level character assessments are often available in published documents. 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.

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 tranquillity.

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. Landscape value is inherent, considered independently of the development proposals.

The baseline assessment considers any natural and cultural heritage, landscape condition, associations with notable people, events and the arts, distinctiveness, recreational opportunities, and perceptual qualities (including scenic quality, wilderness, tranquillity and / or dark skies). These environmental, historical and cultural aspects, physical and visual components are considered together with any statutory and non-statutory designations, taking into account other values to society, which may be expressed by the local community or consultees. Wherever possible information and opinions on landscape value is to be sought through discussions with consultees, stakeholders and user groups.

Landscape value is not always signified by designation. When considering a non-designated area, landscape value will be determined through a review of existing assessments, policies, strategies and guidelines. Where appropriate, new survey and analysis will inform judgements about landscape value. Any landscape designation will be considered in terms of their 'meaning' to today's context.

The tables relating to landscape value and the value attached to views are a starting point for consideration in the field. The following table sets out the criteria and definitions used in the baseline assessment to determine landscape value (in addition to condition / quality). Box 5.1 set out within 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA3) Third Edition (Routledge 2013), along with Technical Guidance Note 02/21 'Assessing landscape value outside national designations' (Landscape Institute, May 2021) have been used to inform these criteria.

Not all of the criteria within Table 1.1 need to be met for a landscape to be assigned a value of high, medium or low.

### Establishing in the Visual Baseline Desk & 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 those 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 is determined through digital mapping constructing a map showing the area where the Proposed Development may theoretically be visible. The actual extent of visibility is checked in the field to record the screening effect of buildings, walls, fences, trees, hedgerows and banks not identified in the initial bare 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:

1.1 Landscape Value Criteria		
High	Medium	Low
<p><b>Natural Heritage</b> Unique components relating to ecology, geology, topography, soils and water. Components may be nationally / internationally designated, including:</p> <ul style="list-style-type: none"> <li>· Sites of Important Nature Conservation</li> <li>· Heritage Coasts</li> <li>· Special Protection Areas</li> <li>· Ancient Woodland</li> </ul>	<p><b>Natural Heritage</b> Common components relating to ecology, geology, topography, soils and water. Components may be designated at the local or borough level, including:</p> <ul style="list-style-type: none"> <li>· TPO's</li> <li>· Nature Reserve's</li> </ul>	<p><b>Natural Heritage</b> Inconsequential components relating to ecology, geology, topography, soils and water. Generally non-designated.</p>
<p><b>Cultural Heritage</b> Rare or distinct components relating to built history that positively contribute to landscape character including:</p> <ul style="list-style-type: none"> <li>· drove roads / salt ways / packhorse trails</li> <li>· sunken lanes</li> <li>· ridge and furrow fields</li> <li>· relic farmsteads</li> </ul> <p>Nationally / internationally designated component/s including:</p> <ul style="list-style-type: none"> <li>· UNESCO World Heritage Sites</li> <li>· Listed buildings / structures and their associated setting.</li> <li>· Historic Parks and Gardens (included within the Register by Historic England)</li> <li>· Registered Battlefield</li> <li>· Scheduled Ancient Monuments</li> </ul>	<p><b>Cultural Heritage</b> Common components relating to built history that positively contribute to landscape character such as vernacular architecture typical of the locality. Locally designated component/s including:</p> <ul style="list-style-type: none"> <li>· Conservation Areas</li> <li>· Scenic Trails / Scenic Routes</li> <li>· Locally listed buildings and monuments</li> </ul> <p>Non-designated components but acknowledge locally for their heritage importance or expressed through non-statutory designations.</p>	<p><b>Cultural Heritage</b> Few or no components relating to built history that positively contribute to landscape character. Generally non-designated.</p>
<p><b>Landscape Condition</b> Landscape area or components in a very good physical condition / intact, with appropriate management. Absence of detracting/ incongruous features (or features are present but are not prominent).</p>	<p><b>Landscape Condition</b> Landscape area or components in a good - ordinary condition, with scope to improve. Some detracting / incongruous features.</p>	<p><b>Landscape Condition</b> Landscape area or components in a poor condition, with scope to improve. Many detracting / incongruous features. Disturbed or derelict land.</p>
<p><b>Associations</b> Many or significant connections with well-known events, people, works of art, science or technical achievements that positively contribute to perceptions of the landscape.</p>	<p><b>Associations</b> Some connections with well-known events, people, works of art, science or technical achievements that positively contribute to perceptions of the landscape.</p>	<p><b>Associations</b> Few or no connections with well-known events, people, works of art, science or technical achievements that positively contribute to perceptions of the landscape.</p>
<p><b>Distinctiveness</b> Unique components that make a strong and multifaceted positive contribution to landscape character e.g. the whalebone arch in Whitby. Landscape area that is recognised nationally / internationally for its scenic beauty, including areas within:</p> <ul style="list-style-type: none"> <li>· National Parks</li> <li>· National Landscapes</li> </ul> <p>Landscape areas that have a strong visual or functional link with adjacent designated landscapes and their special qualities.</p>	<p><b>Distinctiveness</b> Some components that are unique and contribute positively to landscape character. Recognised locally, including designations such as Special Landscape Areas, Areas of Great Landscape Value, Strategic or Local Gaps.</p>	<p><b>Distinctiveness</b> Few landscape areas that are unique and contribute positively to landscape character. Certain individual components identified in landscape character assessments may be worthy of conservation. Frequent dominant detracting features.</p>
<p><b>Recreational</b> Prominence of open access land, common land and public rights of way (particularly National Trails, long distance trails, Coastal Paths and Core Paths), plus high quality public open space. Areas with very good or good accessibility with opportunities for the enjoyment of the outdoors.</p>	<p><b>Recreational</b> Some open access land, common land and public rights of way. Areas with good or ordinary accessibility with opportunities for the enjoyment of the outdoors.</p>	<p><b>Recreational</b> A limited quantum of open access land, common land and public rights of way. Poor accessibility with opportunities for the enjoyment of the outdoors.</p>
<p><b>Perceptual</b> Unique landscape areas or components, particularly regarding scale, form, colour, texture, diversity or contrasts that positively contribute to landscape character. High levels of tranquillity and relative wildness, including sense of remoteness, dark skies, presence of wildlife / bird song and relative peace and quiet.</p>	<p><b>Perceptual</b> Demonstrates some wildness and tranquillity. Some detracting features.</p>	<p><b>Perceptual</b> Limited or no sense of wildness and tranquillity. Frequent / multiple detracting features.</p>
<p><b>Functional</b> Unique landscape areas or components that contribute to the healthy functioning of the landscape and make a strong and multi-faceted positive contribution to landscape character e.g. areas that form carbon sinks such as peat bogs; landscapes / elements that have a strong physical or functional links with an adjacent national landscape designation, or are important to the appreciation of its special qualities</p>	<p><b>Functional</b> Landscape areas or components which make some contribution to the healthy functioning of the landscape; landscapes / elements that have some physical or functional links with an adjacent national landscape designation, or provide some role to the appreciation of its special qualities.</p>	<p><b>Functional</b> Limited or no contribution to the healthy functioning of the landscape or adjacent national landscape designations.</p>

- 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 adjacent to Listed Buildings - and co-ordinated with the heritage consultant - 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;

Views from the following are to be included in the visual assessment:

- Individual private dwellings. These are to be collated as representative viewpoints as it may not be practical to visit all properties that might be affected;
- Transient or static 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, where relevant.

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

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 these views. To indicate the degree of visibility of the Site from any location, three categories are used:

- Open View:**  
An open view of the whole site / where much of the Site is visible, or where the Site forms much of the view.
- Partial View:**  
Some of the Site is visible, or where the Site forms 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 Viewpoint Plan

will be prepared to illustrate the representative views into / towards the Site (if publicly accessible) and the degree of visibility of the Site noted.

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.

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 preferred siting, layout and design.

### Value of Visual Receptors

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

1.2 – 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 or National Landscape).
Medium	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.

## Assessment of Landscape and Visual Susceptibility and Magnitude

The assessment of landscape and visual effects is obtained through assessing susceptibility, combining this with the judgement on value, to form the sensitivity of receptors. Sensitivity is then linked with a judgement of magnitude of effect experienced to form the assessment of effect. Susceptibility, sensitivity and magnitude of effect are explained further within this section.

### Landscape Susceptibility

The susceptibility of the landscape is a measure of its vulnerability to the type of development proposed, without undue consequences for the maintenance of the baseline situation. Existing landscape capacity assessments may form a starting point for the refinement of the assessment of landscape susceptibility at the local and site level. The overall susceptibility for each landscape receptor is categorised as High, Medium or Low as set out in Table 1.3.

1.3 – Landscape Susceptibility Criteria	
Susceptibility	Criteria
High	The receptor has a well-defined composition with a direct relationship to adjacent key characteristics. The development proposed is likely to alter the overall integrity of the receptor and is very unlikely to be able to accommodate recommendations as set out in published guidelines.
Medium	The receptor has a varied composition with some links to adjacent key characteristics. The development proposed may potentially alter the overall integrity of the receptor and could incorporate recommendations as set out in published guidelines.
Low	The receptor has a disjointed composition with little - no links to adjacent key characteristics. The development proposed is unlikely to alter the overall integrity of the receptor and is capable of incorporating recommendations as set out in published guidelines.

### Visual Susceptibility

The susceptibility of different visual receptors to changes in views and visual amenity is mainly a function of:

- the occupation or activity of people experiencing the view at particular locations; and
- the extent to which their attention or interest may therefore be focused on the views and the visual amenity they experience at particular locations.

The overall susceptibility for each visual receptor is categorised as High, Medium or Low as set out in Table 1.4

1.4 Visual Susceptibility Criteria	
Susceptibility	Criteria
High	People engaged in an activity and/or at a location where they are focused on the landscape; where the view contributes to the amenity experience; and where there is opportunity to appreciate the view.
Medium	People engaged in an activity and/or at a location where they are not especially focused on the landscape; where the view contributes in part to the amenity experience; and where there is some opportunity to appreciate the view.
Low	People engaged in an activity and/or at a location where they are not focused on the landscape; where the view does not contribute to the amenity experience; and where there is little - no opportunity to appreciate the view.

### Sensitivity Judgements

The assessment of landscape / visual sensitivity is then combined through a judgement on the value attributed to that receptor (at the baseline stage) and the susceptibility of the receptor to the proposed change using the criteria as set out in Tables 1.3 and 1.4.

Table 1.5 below sets out the sensitivity matrix, with criteria set out as High, Medium and Low.

1.5 Landscape and Visual Sensitivity Matrix				
		Landscape / Visual Receptor Susceptibility		
		High	Medium	Low
Landscape / Visual Value	High	High	High	Medium
	Medium	High	Medium	Medium
	Low	Medium	Medium	Low

## Landscape Magnitude of Effects

### Size and Scale

Factors contributing to the size and scale of the change to be experienced by the landscape receptor (as set out in Table 1.6) include the extent of the receptor that will be altered (with reference to their wider contribution to the landscape); the degree to which aesthetic of perceptual aspects will be altered; and the geographical area that will be directly and indirectly altered.

1.6 Landscape Scale Criteria	
Extent	Description
Substantial	Likely be a whole scale change to the landscape receptor, which will result in change in the integrity of the receptor of a wide geographic area.
Sizeable	Likely be change to a high proportion of the landscape receptor, which will result in a noticeable change in the integrity of the receptor of an extended geographic area.
Modest	Likely be change to a moderate proportion of the landscape receptor, which will be perceptible and have some effect on the integrity of the receptor within a localised geographic area.
Compact	Likely be change to a limited proportion of the landscape receptor, which will not be discernible or have no - limited effect on the integrity of the receptor within its immediate setting (very localised geographic area).

### Duration and Reversibility

Factors contributing to the duration of the change to be experienced by the landscape receptor (as set out in Table 1.7) include whether the change is wholly reversible, permanent or temporary. Construction impacts are likely to be short 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.

1.7 Landscape Duration and Reversibility Criteria	
Extent	Description
Long	Likely to be of permanence (10 - 25 years +) with limited prospect of being reinstated and is deemed irreversible.
Medium	Likely to be of permanence (between 5-10 years) and is potentially, or theoretically reversible.
Short	Likely to be up to 5 years and is wholly or partially reversible / receptors can be reinstated.
Very Short	Likely to be temporary (up to 2 years) and readily reinstated / reversed. Includes construction effects (unless these are for an extended period).

## Visual Magnitude of Effects

### Scale

Factors contributing to the scale of the change to be experienced by the visual receptor (as set out in Table 1.8) include the angle of view in relation to the main activity of the receptor; the distance of the viewer from the Proposed Development; the extent of the area over which the changes will be visible; and the degree of visual intrusion of the Proposed Development in the view.

1.8 Visual Scale Criteria	
Extent	Description
Substantial	Likely be a distinct change in the composition of the view, close to the viewer and occupying a wide extent of the view.
Sizeable	Likely be a noticeable change in the composition of the view, which may be close to the viewer and / or occupying a sizeable extent of the view.
Modest	Likely be a perceptible change in the composition of the view, which may be at some distance from the viewer, or nearby but only glimpsed and/or occupying a discrete extent of the view.
Compact	Likely be a barely perceptible change in the composition of the view, which is likely to be at a considerable distance from the viewer and only glimpsed and / or occupying a limited extent of the view.

### Duration and Reversibility

Factors contributing to the duration of the change to be experienced by the visual receptor (as set out in Table 1.9) include whether the view is experienced in fixed or transient views; and the nature of transient views - being intermittent, glimpsed or continuous.

1.9 Visual Duration and Reversibility Criteria	
Extent	Description
Long	Likely to be of permanence and visible for a continuous period.
Medium	Likely to be of permanence and intermittently visible.
Short	Likely to be temporary and visible for a continuous period.
Very Short	Likely to be temporary and intermittently visible.

### Magnitude of Effect Judgements

The assessment of size / scale / geographic extent plus duration and reversibility is then combined based on the matrix as set out in Table 1.10 below, with criteria set out as High, Medium, Low and Negligible.

1.10 Magnitude Matrix					
		Duration and Reversibility			
		Long	Medium	Short	Very Short
S c a l e	Substantial	High	High - Medium	Medium	Low - Negligible
	Sizeable	High - Medium	Medium	Medium	Low - Negligible
	Modest	Medium	Medium	Low	Negligible
	Compact	Low - Negligible	Low - Negligible	Negligible	Negligible

## Significance of Effects

Sensitivity and magnitude of effect are considered alongside one another for each receptor, in line with Table 1.11 below, to draw conclusions on the significance of landscape and visual effects. The significance of effects will be considered at different stages of the project life cycle: during construction; at Year 1 of operation; and at Year 15 of operation.

The assessment of significance is subject to professional judgement and is rated on a scale of Negligible through to Major. Table 1.11 sets out a starting point for the assessment, it is important that a balanced and well reasoned professional judgement of these two criteria is provided with an explanation..

1.11 Significance Matrix				
		Landscape and Visual Receptor Sensitivity		
		High	Medium	Low
M a j o r  s i g n i f i c a n c e	High	Major	Major - Moderate	Moderate
	Medium	Major - Moderate	Moderate	Moderate - Minor
	Low	Moderate	Moderate - Minor	Minor
	Negligible	Minor	Minor - Negligible	Negligible

The judgement of significance indicates how important the effect is likely to be from a landscape and visual perspective. For schemes subject to Environmental Impact Assessment, effects of Major or Moderate significance are deemed 'significant' as governed by the EIA Directive (2014/52/EU).

1.12 Significance Description	
Significance	Description
Major	An effect that is likely to be very important from a landscape and visual perspective.
Moderate	An effect that is potentially important from a landscape and visual perspective.
Minor	An effect that is unlikely to be important from a landscape and visual perspective.
Negligible	An effect that has minimal importance from a landscape and visual perspective.
No change	No effect and therefore of no importance from a landscape and visual perspective.

## Nature of Effects

Effects are defined as beneficial, adverse, or neutral, as defined in Table 1.13. This consideration is termed the 'balance of effects', factoring in both the potentially beneficial and adverse aspects associated with a given change and its resultant effect. Where landscape effects are judged to be adverse, additional mitigation or compensatory measures are to be considered. The significant landscape effects remaining after mitigation are then to be summarised as the residual effects.

Effects will be described clearly and objectively, and the extent and duration of any negative / positive effects quantified, using four categories of effects, indicating a gradation from high to low.

1.13 Nature of Effects Criteria	
Nature	Description
Beneficial	An effect that will on balance result in an improvement to the condition, integrity or key characteristics/ composition of the landscape receptor or viewing experience.
Adverse	An effect that will on balance result in damage to the condition, integrity or key characteristics/composition of the landscape receptor or viewing experience.
Neutral	An effect that will on balance maintain the condition, integrity or key characteristics / composition of the landscape receptor or viewing experience and may incorporate a combination of positive and negative aspects.

## Effects During Site Enabling & Construction

- It is recognised that project characteristics and hence sources of effects, will vary through time. The initial effects arise from the Site enabling and construction works. Sources of landscape and visual effects may include:
  - The location of the Site access and haulage routes;
  - The origin and nature of materials stockpiles, stripping of material and cut and fill operations / disposal and construction compounds;
  - The construction equipment and plant (and colour);
  - The provision of utilities, including lighting and any temporary facilities;
  - The scale, location and nature of any temporary parking areas and on-site accommodation;
  - The removal of vegetation to facilitate site access and establish the development platforms;
  - The measures for the temporary protection of existing features (such as vegetation, trees, ponds, etc) and any temporary screening (such as hoarding lines); and
  - The programme of work and phasing of construction.

## Effects During Operation (at Year 1 and 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 elevation treatments; structures and processes, including any other features;
- Access arrangements and traffic movements;
- The operational landscape, including landform, structure planting, green infrastructure and hard landscape features.

## Mitigation 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

(tertiary mitigation); and

- Secondary (or residual) measures designed to specifically address the remaining effects after the primary and standard construction practices have been incorporated.

## Residual Effects

The residual effects of the Proposed Development are to be assessed. Residual effects are those at year 15 and 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.

## Cumulative Effects

Cumulative effects are assessed where appropriate and 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.

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.

2.0

Representative Views

# 1.0 Visual Assessment

## 1.1 Zone of Theoretical Visibility

The extent to which the Site is visible from the surrounding landscape is based on grading of degrees of visibility. It has been determined through a visual inspection of the Site and its context from roads, public rights of way and properties.

Seasonal change in existing evergreen and deciduous plant material will affect the available views. Typically views will be different through the seasons with a greater sense of enclosure in the summer months when deciduous trees are in leaf.



Figure 2.1 provides a Zone of Theoretical Visibility, based on assumed development parameters of up to 4 storeys high (15m), as worst case. It has been assumed that:

- Woodland on Site and within the surrounds are to be retained
- Existing buildings at a generic 9m height
- Existing woodland at a generic 15m height

In reality, views towards the Site are filtered by the intervening built form and layers of vegetation. Representative viewpoints from the study area are presented on Figure 2.2-2.3. The exact location of these may alter following the field visit.

Photographs from each location, along with a description of each view, will be provided. The photographs will be taken in line with the Landscape Institute's Technical Guidance Note 6/19 Visual Representation of Development Proposals (Landscape Institute, 2019) and will be presented at the same scale and resolution, with viewpoint location plans for reference.

The Landscape Institute's Technical Guidance Note 2/19 Residential Visual Amenity Assessment (Landscape Institute, 2019) will inform the approach to the assessment of residential visual amenity, within the scope of the report.

-  Site boundary
-  Zone of theoretical visibility

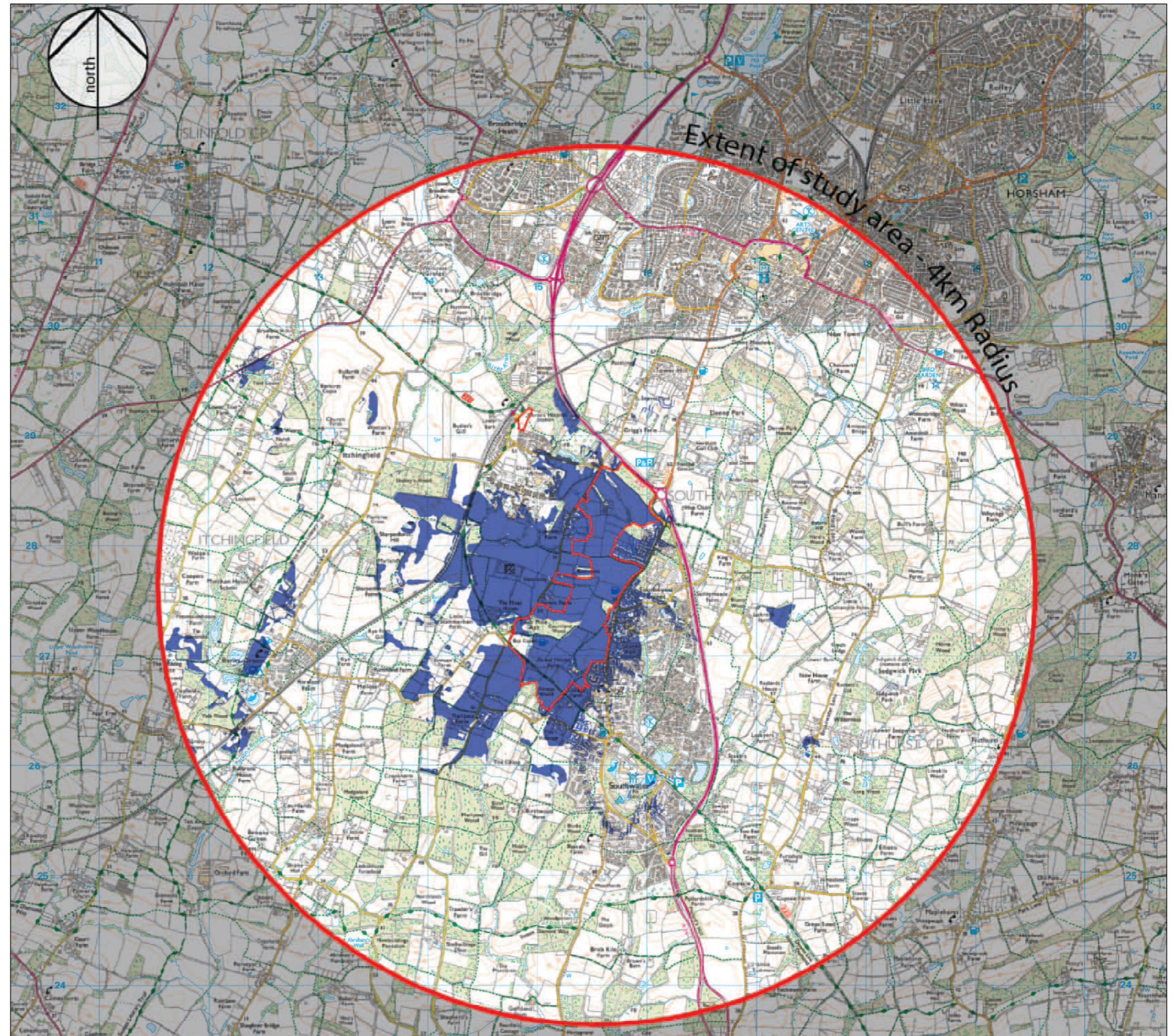
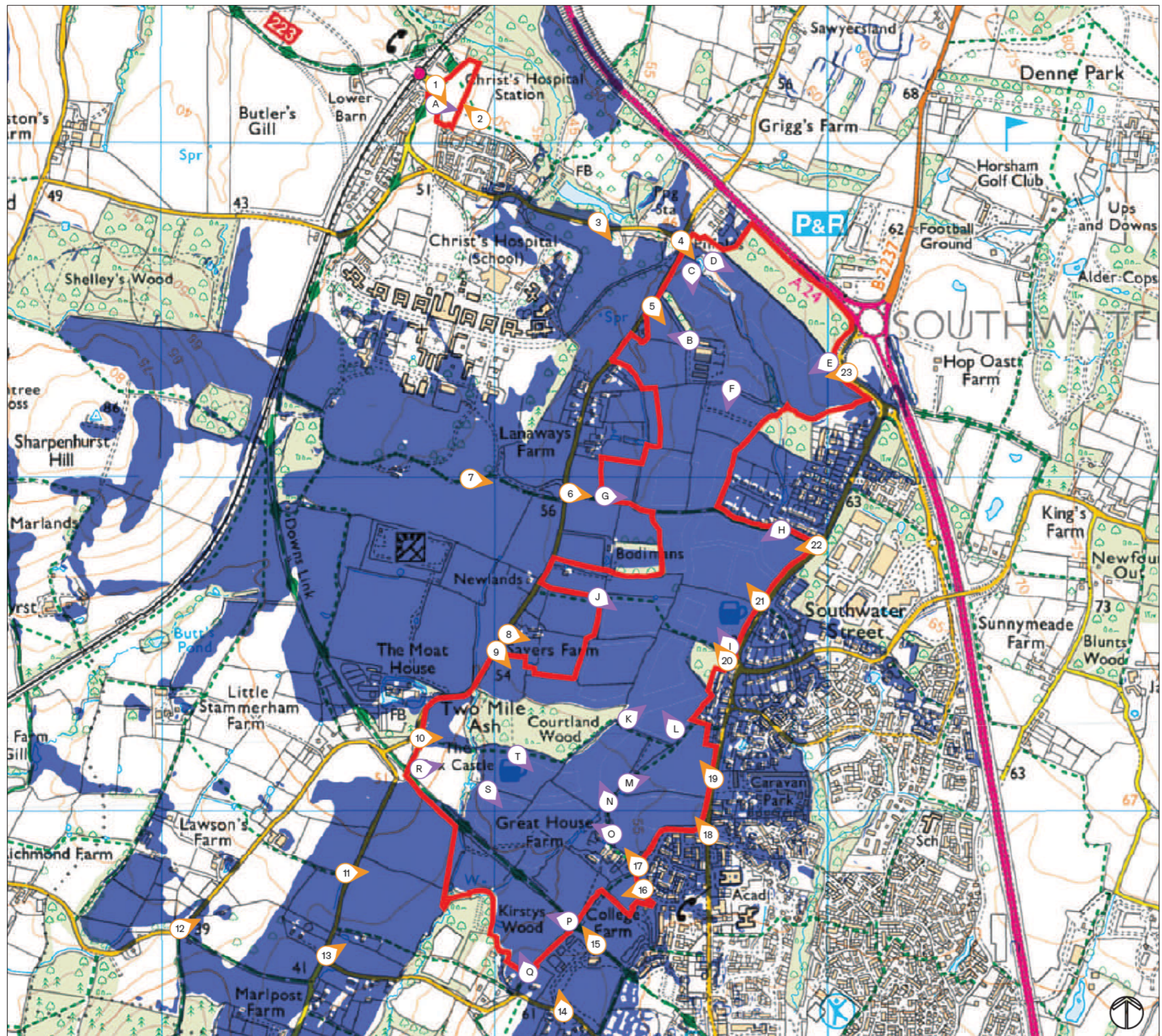
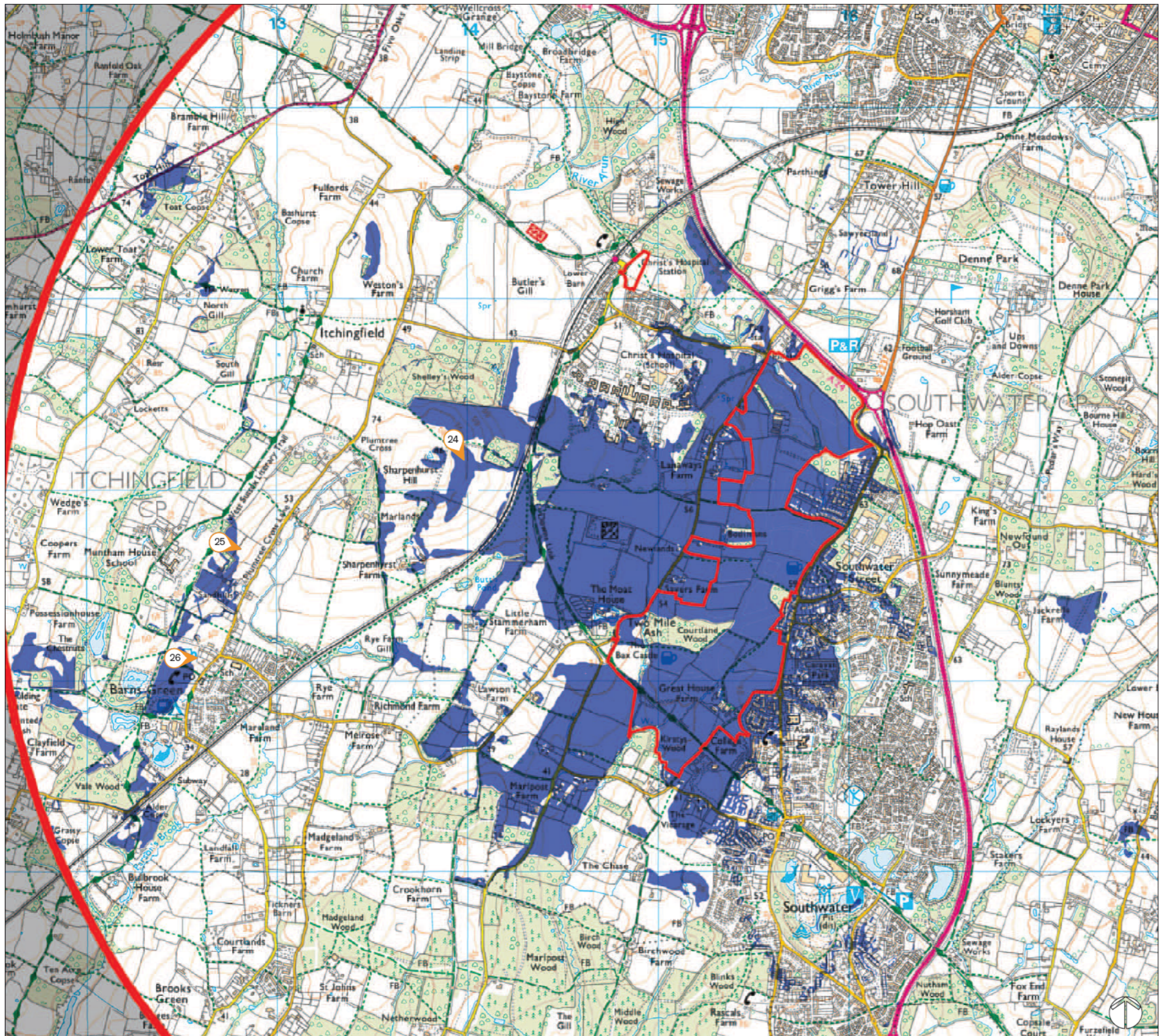


Figure 2.1 – Zone of Theoretical Visibility (Munro Studios, 2025)



- Site boundary
- Zone of theoretical visibility
- Viewpoint Location
- Internal Viewpoint Location

Figure 2.2 – Visual Summary from local area (fabrik, 2025)



- Site boundary
- Zone of theoretical visibility
- Viewpoint Location

Figure 2.3 – Visual Summary from wider area (fabrik, 2025)

# fabrik

Lenten House  
16 Lenten Street  
Alton  
Hampshire  
GU34 1HG

First Floor Studio  
The Old School  
4 Exton Street  
London  
SE1 8UE

[fabrikuk.com](http://fabrikuk.com)

# Appendix 8.2

## **LANDSCAPE LEGISLATION, POLICY AND GUIDANCE**



## LEGISLATION, POLICY AND GUIDANCE

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### LEGISLATIVE CONTEXT

In addition to the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, the legislative framework relative to landscape and visual matters is as follows:

- Landscape Convention of the Council of Europe (ELC, 2000 and as amended 2016)<sup>1</sup>;
- Parts I-II of the Countryside and Rights of Way (CRoW) Act 2000<sup>2</sup>; and
- Chapter 1 of the Environment Act 2021<sup>3</sup>.

### POLICY CONTEXT

December 2024 National Planning Policy Framework (NPPF) seeks the presumption in favour of sustainable development. The following sections of the NPPF are pertinent to the Proposed Development, and landscape and visual matters<sup>4</sup>:

- Section 2 Achieving Sustainable Development;
- Section 8 Promoting Healthy and Safe Communities;
- Section 12 Well Designed Places;
- Section 14 Meeting the Challenge of Climate Change, Flooding and Coastal Change;
- Section 15 Conserving and Enhancing the Natural Environment; and
- Section 17 Protecting and Enhancing the Historic Environment.

The NPPF is supported by the online resource Planning Practice Guidance (PPG)<sup>5</sup>. The pertinent sections include the following:

- Climate Change;
- Design: process and tools;
- Environmental Impact Assessment;

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<sup>1</sup> Landscape Convention of the Council of Europe (2016). (ELC, 2000 and as amended 2016).

<sup>2</sup> HM Government (2000). Countryside and Rights of Way (CRoW) Act 2000. Available online: <https://www.legislation.gov.uk/ukpga/2000/37/contents> [Accessed September 2025].

<sup>3</sup> HM Government (2021). Environment Act 2021. Available online: <https://www.legislation.gov.uk/ukpga/2021/30/contents> [Accessed September 2025]

<sup>4</sup> Ministry of Housing, Communities and Local Government (2024). National Planning Policy Framework. MHCLG, London. Available online: [https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF\\_December\\_2024.pdf](https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf) [Accessed September 2025]

<sup>5</sup> Planning Practice Guidance 2024 [Planning practice guidance - GOV.UK](https://www.gov.uk/guidance/planning-practice-guidance) [Accessed September 2025].

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- Open space, sports and recreation facilities, public rights of way and local green space;
- Natural Environment; and
- Historic Environment.

The National Design Guide and Model Design Code are also relevant to the Proposed Development and landscape and visual matters.

The Horsham District Planning Framework (2015) forms part of the development plan for the district, with the following policies pertinent to landscape and visual matters<sup>6</sup>:

- Policy 1 Strategic Policy: Sustainable Development;
- Policy 2 Strategic Policy: Strategic Development;
- Policy 4 Strategic Policy: Settlement Expansion;
- Policy SD6 Landscape Buffer, Landscape Character, Biodiversity and Green Infrastructure;
- Policy SD7 Design;
- Policy 25 Strategic Policy: The Natural Environment and Landscape Character;
- Policy 26 Strategic Policy: Countryside;
- Policy 31 Green Infrastructure and Biodiversity;
- Policy 32 Strategic Policy: The Quality of New Development; and
- Policy 34 Cultural and Heritage Assets.

The Horsham District Local Plan 2023 - 2040 (Regulation 19) forms part of the emerging development plan for the district, with the following policies pertinent to landscape and visual matters:

- Strategic Policy 10: Flooding;
- Strategic Policy 11: Environmental Protection;
- Strategic Policy 13: The Natural Environment and Landscape Character;
- Strategic Policy 14: Countryside Protection;
- Strategic Policy 15: Settlement Coalescence;
- Strategic Policy 17: Green Infrastructure and Biodiversity;
- Policy 18: Local Green Space;
- Strategic Policy 19: Development Quality;

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<sup>6</sup> Horsham District Council (2015). Horsham District Planning Framework (excluding South Downs National Park). Available online: [https://www.horsham.gov.uk/\\_data/assets/pdf\\_file/0016/60190/Horsham-District-Planning-Framework-November-2015.pdf](https://www.horsham.gov.uk/_data/assets/pdf_file/0016/60190/Horsham-District-Planning-Framework-November-2015.pdf) [Accessed August 2025].

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- Strategic Policy 20: Development Principles;
- Strategic Policy 21: Heritage Assets and Managing Change within the Historic Environment;
- Strategic Policy 28: Community Facilities and Uses; and
- Strategic Policy HA3: Land North West of Southwater.

The Southwater Neighbourhood Development Plan (June 2021), with the following policies pertinent to landscape and visual matters<sup>7</sup>:

- SNP1 Core Principles;
- SNP2 Proposals for new residential development;
- SNP12 Outdoor Play Space;
- SNO13 - Enhancing our Non-Motorised Transport Network;
- SNP16 Design;
- SNP18 A Treed Landscape; and
- SNP19 Parish Heritage Assets.

### Guidance and Best Practice

In addition to the policies above, the following guidance documents and informatives are relevant:

- The Horsham District Sport, Open Space and Recreation Assessment, February 2014<sup>8</sup>;
- Open Space, Sport & Recreation Review, 2021<sup>9</sup>;
- Green Infrastructure Strategy Horsham District Planning Framework, April 2024<sup>10</sup>;
- Guidelines for Landscape and Visual Impact Assessment (GLVIA) Third Edition (Routledge 2013) by the Landscape Institute and the Institute of Environmental Management and Assessment<sup>11</sup>;

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<sup>7</sup> Southwater Parish Council (2020). Southwater Neighbourhood Development Plan 2019-2031. Available online:

[https://www.horsham.gov.uk/\\_data/assets/pdf\\_file/0007/108619/Southwater-Neighbourhood-Plan-Referendum-Version.pdf](https://www.horsham.gov.uk/_data/assets/pdf_file/0007/108619/Southwater-Neighbourhood-Plan-Referendum-Version.pdf)  
[Accessed August 2025].

<sup>8</sup> Horsham District Council (2014). Sport, Open Space, and Recreation Assessment. Available online:

[https://www.horsham.gov.uk/\\_data/assets/pdf\\_file/0003/66504/Sport-Open-Space-Recreation-Assessment-February-2014.pdf](https://www.horsham.gov.uk/_data/assets/pdf_file/0003/66504/Sport-Open-Space-Recreation-Assessment-February-2014.pdf)  
[Accessed September 2025]

<sup>9</sup> Horsham District Council (2021). Open Space, Sport & Recreation Review. Available online:

[https://www.horsham.gov.uk/\\_data/assets/pdf\\_file/0020/104249/Open-Space-Rprt-Jun2021FINAL.pdf](https://www.horsham.gov.uk/_data/assets/pdf_file/0020/104249/Open-Space-Rprt-Jun2021FINAL.pdf) [Accessed September 2025]

<sup>10</sup> Horsham District Council (2024). Green Infrastructure Strategy and Guide. Available online:

[https://www.horsham.gov.uk/\\_data/assets/pdf\\_file/0013/132610/Green-Infrastructure-Strategy-January-2024.pdf](https://www.horsham.gov.uk/_data/assets/pdf_file/0013/132610/Green-Infrastructure-Strategy-January-2024.pdf) [Accessed September 2025]

<sup>11</sup> Landscape Institute & Institute of Environmental Management & Assessment (LIIEMA) (2013). Guidelines for Landscape and Visual Impact Assessment. 3rd Edition. Landscape Institute and Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment. Third Edition. Spon Press. (GLVIA3).

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- Technical Guidance Note 6/19 Visual Representation of Development Proposals, Landscape Institute, 2019<sup>12</sup>; and
- Technical Guidance Note 02/21 Assessing Landscape Value Outside National Designations, Landscape Institute, 2021<sup>13</sup>.

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<sup>12</sup> The Landscape Institute (2019). Technical Guidance Note 09/19, Visual Representation of Development Proposals.

<sup>13</sup> The Landscape Institute (2021). Technical Guidance Note 02/21 – Assessing Landscape Value Outside National Designations.

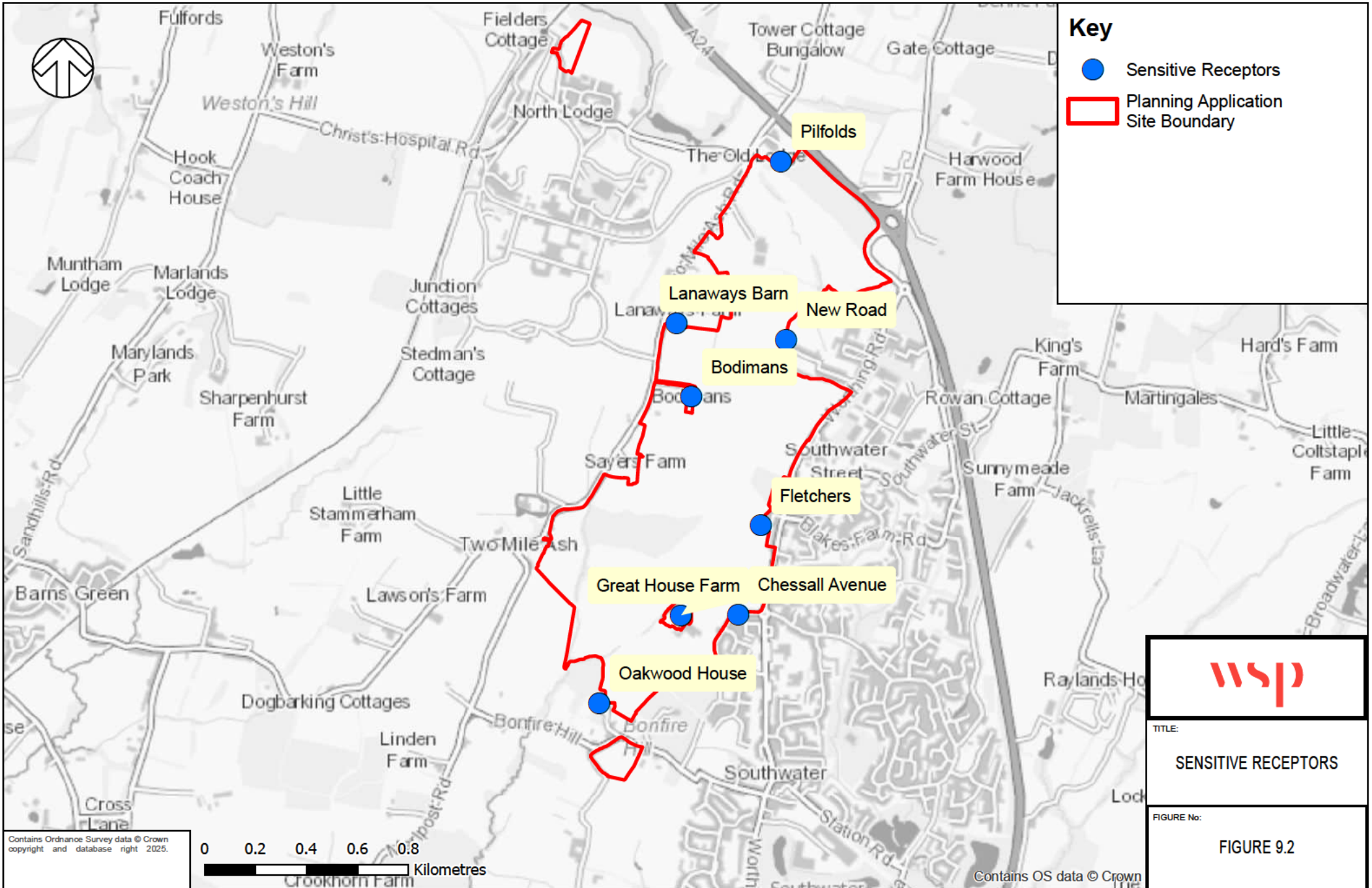
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# Appendix 9.1

## **NOISE FIGURES**







TITLE:  
SENSITIVE RECEPTORS

FIGURE No:  
FIGURE 9.2

# Appendix 12.1

## **WATER LEGISLATION, POLICY AND GUIDANCE**



## LEGISLATION, POLICY AND GUIDANCE

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### PROPOSED ASSESSMENT METHODOLOGY

The assessment of Water Resources, Flood Risk and Drainage will be undertaken in the context of and considering the following:

- Horsham District Water Neutrality and it's Planning Implications, Natural England (September 2021)<sup>1</sup>;
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017<sup>2</sup>;
- The Floods Directive (2007/60/EC)<sup>3</sup>;
- The Flood Risk Regulations, 2009<sup>4</sup>;
- Water Resources Act 1991 and (Amendment) 2009<sup>5</sup>;
- Environment Act 2021<sup>6</sup>;
- Water Act 2003 and 2014<sup>7</sup>;
- The Anti-Pollution Works Regulations 1999<sup>8</sup>;
- Land Drainage Act 1991 and 1994<sup>9</sup>;
- Flood and Water Management Act 2010<sup>10</sup>;
- The Environmental Damage (Prevention and Remediation) (England) Regulations 2015<sup>11</sup>;

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<sup>1</sup> Horsham District Council (2021) Water Neutrality in Horsham District and its planning implications. Available online: <https://www.horsham.gov.uk/news/2021/10/water-neutrality-in-horsham-district-and-its-planning-implications> [Accessed February 2022].

<sup>2</sup> HM Government, The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.

<sup>3</sup> European Commission, The Floods Directive (2007/60/EC).

<sup>4</sup> HM Government, The Flood Risk Regulations, 2009.

<sup>5</sup> HM Government, The Water Resources Act 1991.

<sup>6</sup> HM Government (2021). Environment Act 2021. Available online: <https://www.legislation.gov.uk/ukpga/2021/30/contents> [Accessed September 2025]

<sup>7</sup> HM Government, The Water Act 2003 and 2011.

<sup>8</sup> HM Government, The Anti-Pollution Works Regulations 1999.

<sup>9</sup> HM Government, Land Drainage Act 1991 and 1994.

<sup>10</sup> HM Government, Flood and Water Management Act 2010.

<sup>11</sup> HM Government, The Environmental Damage (Prevention and Remediation) (England) Regulations 2015.

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- The Environmental Permitting (England and Wales) Regulations (2010) and (Amendment) (No. 110) 2018<sup>12</sup>;
- The Environmental Protection Act 1990<sup>13</sup>;
- National Planning Policy Framework (NPPF) (2024)<sup>14</sup>; and
- Relevant HDC policies.
- National standards for sustainable drainage systems (SuDs 2025).

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<sup>12</sup> HM Government, The Environmental Permitting (England and Wales) Regulations (2010) and (Amendment) (No. 110) 2018.

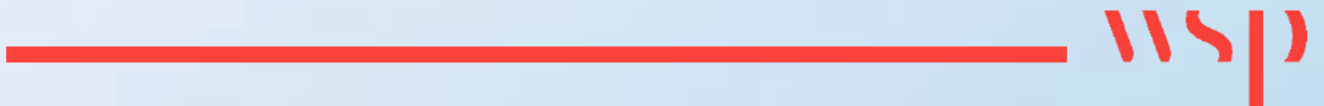
<sup>13</sup> HM Government, The Environmental Protection Act 1990.

<sup>14</sup> Ministry of Housing, Communities and Local Government (2024). National Planning Policy Framework. MHCLG, London. Available online: [https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF\\_December\\_2024.pdf](https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf) [Accessed September 2025]

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# Appendix 13.1

## **GROUND LEGISLATION, POLICY AND GUIDANCE**



## LEGISLATION, POLICY AND GUIDANCE

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Prior to March 2012, policy comprised a range of planning policy guidance documents (PPG) and planning policy statements (PPS) covering a range of environmental subjects. These were replaced by a more concise single document known as the National Planning Policy Framework (NPPF)<sup>1</sup>. The NPPF (December 2024 version) makes a number of statements that relate to contamination and ground instability.

In paragraph 87 (e) and (f) of the NPPF states that:

*“Planning policies and decisions should contribute to and enhance the natural and local environment by.....*

- *preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and*
- *Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.”<sup>1</sup>*

In paragraph 196 a), b), and c) of the NPPF states the following:

*“Planning policies and decisions should ensure that:*

- *a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation).*
- *after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and*
- *adequate site investigation information, prepared by a competent person, is available to inform these assessments.”<sup>1</sup>*

In paragraph 198 of the NPPF state:

*“Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development.”<sup>1</sup>*

In terms of development of agricultural land, the NPPF places a greater emphasis on sustainable development than previous policy documents, but at the expense of some detail. However, in its

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<sup>1</sup> Ministry of Housing, Communities and Local Government (2024). National Planning Policy Framework. MHCLG, London. Available online: [https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF\\_December\\_2024.pdf](https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf) [Accessed September 2025]

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core planning principles it states the following, where planning policies and decisions should contribute to and enhance the natural and local environment by stating in paragraph 187 b):

*“recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.”<sup>1</sup>*

In describing what it means by “best and most versatile agricultural land” the NPPF states in Annex 2:

*“Best and most versatile agricultural land: Land in grades 1, 2 and 3a of the Agricultural Land Classification.”<sup>1</sup>*

In addition, NPPF paragraph 188 states that:

*“Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework (Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality); take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.”<sup>1</sup>*

The Local Plan for Horsham District Council runs from 2023 to 2040 (HDLP)<sup>2</sup>.

The Strategic policy 11: Environmental Protection, p57 of the HDLP states that *“Development proposals must ensure that they: Address land contamination by promoting the appropriate re-use of sites and deliver the required remediation. Proposals where contamination is known or suspected, or the site is within the vicinity of contaminated land, must be accompanied by a Land Contamination Assessment. Are appropriate to their location, taking account of ground conditions and land instability. Maintain or improve the environmental quality of any watercourses, groundwater and drinking water supplies, and prevent contaminated run-off to surface water sewers, taking into account the Water Framework Directive and South East River Basin Management Plan or any subsequent updates.”<sup>2</sup>*

Section 6.3 page 55 states that *“The land in the District is predominantly agricultural, but there is potential for a small number of sites to be contaminated as a result of past uses. Development proposals which would be impacted by contamination would need to ensure that remediation of the land takes place”<sup>2</sup>*.

It is noted that the local plan for Horsham District Council is in the final period of public engagement before the plan is submitted to the Secretary of State for examination and not yet adopted, so the

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<sup>2</sup> Horsham District Council (2023) Local Plan 2023 - 2040 (Regulation 19) [Appendix 1 - Horsham District Local Plan Regulation 19 Dec 2023.pdf](#) [Accessed September 2025].

Horsham District Planning Framework 2015 (HDPF)<sup>3</sup>, remains an important source for planning policy relating to ground conditions and contamination.

Chapter 9.2, p96 of the HDPF states that *“.....there is potential for a small number of sites to be contaminated as a result of past uses. Development proposals which would be impacted by contamination would need to ensure that remediation of the land takes place.”*<sup>3</sup>

Chapter 9.10, p96 of the HDPF states that *“.....The Council will seek to ensure that surface water flooding is managed to prevent the contamination of water courses. Where necessary, contaminated land should be remediated.....”*<sup>3</sup>

Policy 24, p99 of the HDPF states that developments should:

- *“Address land contamination by promoting the appropriate re-use of sites and requiring the delivery of appropriate remediation.”*
- *Are appropriate to their location, taking account of ground conditions and land instability.*
- *Maintain or improve the environmental quality of any watercourses, groundwater and drinking water supplies, and prevent contaminated run-off to surface water sewers;”*<sup>3</sup>

Neither the current HDLP nor the emerging HDLP make reference to policies referring to agricultural land quality.

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<sup>3</sup> Horsham District Council (2015). Horsham District Planning Framework (excluding South Downs National Park). Available online: [https://www.horsham.gov.uk/\\_data/assets/pdf\\_file/0016/60190/Horsham-District-Planning-Framework-November-2015.pdf](https://www.horsham.gov.uk/_data/assets/pdf_file/0016/60190/Horsham-District-Planning-Framework-November-2015.pdf) [Accessed August 2025].

# Appendix 14.1

## **GHG LEGISLATION, POLICY AND GUIDANCE**



## LEGISLATION, POLICY AND APPROACH TO ASSESSMENT

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### PROPOSED ASSESSMENT METHODOLOGY/SCOPE OF ASSESSMENT

The applicable legislation context for the assessment of the Proposed Development for GHG comprises:

- Planning and Energy Act 2008<sup>1</sup>;
- Carbon Budgets, 2021<sup>2</sup>;
- The Carbon Plan: Delivering our Low Carbon Future (2011)<sup>3</sup>;
- UK Climate Change Risk Assessment (2017)<sup>4</sup>; and
- National Planning Policy Framework (2021)<sup>5</sup>.

#### Carbon Budgets, 2021<sup>2</sup>

Carbon budgets place restrictions on the amount of GHG the UK can emit over a five-year period. The UK is the first country to set legally binding carbon budgets. Every tonne of GHG emitted between now and 2050 will be counted towards the budget. If emissions rise in one sector, the UK will have to reduce emissions in another sector to balance the budget. The carbon budget for the fifth budgetary period covering 2028 to 2032 was at 1,725 MtCO<sub>2e</sub>. The current, sixth carbon budget for the period of 2033-2037 has been set at 965 MtCO<sub>2e</sub>.

#### National Planning Policy Framework, 2021<sup>5</sup>

The National Planning Policy Framework (NPPF) 2021 sets out the Government's planning policies for England and how these are to be applied. Guidance relating to the reduction of greenhouse gases and ways to minimise vulnerability and improve resilience to climate change impacts is mainly set out in Section 14 "Meeting the Challenge of Climate Change, Flooding and Coastal Change". Within paragraph 8, the document confirms that the purpose of the planning system is to contribute to the achievement of sustainable development, which includes economic, social and environmental

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<sup>1</sup> HM Government (2008)/ Planning and Energy Act 2008. Available online: <https://www.legislation.gov.uk/ukpga/2008/21/introduction> [Accessed February 2022].

<sup>2</sup> HM Government (2021). The Carbon Budgets Order 2021. Available online: <https://www.legislation.gov.uk/uksi/2021/750/contents/made> [Accessed February 2022].

<sup>3</sup> DECC (2011). The Carbon Plan: Delivering our Low Carbon Future. Available at: <https://www.ukgbc.org/sites/default/files/3702-the-carbon-plan-delivering-our-low-carbon-future.pdf> [Accessed January 2022].

<sup>4</sup> HM Government (2017). UK Climate Change Risk Assessment 2017. Available online: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/584281/uk-climate-change-risk-assess-2017.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/584281/uk-climate-change-risk-assess-2017.pdf) [Accessed February 2022].

<sup>5</sup> Ministry of Housing, Communities and Local Government (2024). National Planning Policy Framework. MHCLG, London. Available online: [https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF\\_December\\_2024.pdf](https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf) [Accessed September 2025]

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dimensions. The main relevant policies are set out in paragraphs 8, 20, 148, 150 and 154 which all support the reduction of greenhouse gas emissions.

### **Policy And Regulation Context**

The applicable policy and regulation context for the assessment of the Proposed Development comprises:

- Building Regulations 2010, Approved Document L1A: conservation of fuel and power in new dwellings, 2013 edition with 2016 amendments<sup>6</sup>; and
- The Carbon Plan: Delivering our Low Carbon Future (2011)<sup>3</sup>.

### **Building Regulations**

The Building Regulations Part L govern the conservation of fuel and power in both new construction and refurbishment of the England and Wales building stock. Compliance with the Building Regulations is a regulatory requirement for all new developments. Carbon emissions of a development comparative to compliance with Part L is the key performance indicator for achieving many carbon targets. (*The new Regulations will come into force in June 2022*).

### **Guidance and Best Practice**

The guidance and best practice relevant to this chapter are presented below:

- Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (IEMA)<sup>7</sup>;
- RIBA 2030 Climate Challenge version 2 (2021)<sup>8</sup>; and
- National Planning Practice Guidance on Climate Change<sup>9</sup>.

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<sup>6</sup> HM Government, 2016. The Building Regulations 2010, Approved Document L1A: conservation of fuel and power in new dwellings, 2013 edition with 2016 amendments. Available online:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/540326/BR\\_PDF\\_AD\\_L1A\\_2013\\_with\\_2016\\_amendments.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/540326/BR_PDF_AD_L1A_2013_with_2016_amendments.pdf) [Accessed February 2022].

<sup>7</sup> Institute of Environmental Management and Assessment (2017). Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance.

<sup>8</sup> Royal Institute of British Architects, RIBA 2030 Climate Challenge version 2 (2021). Available online: <https://www.architecture.com/about/policy/climate-action/2030-climate-challenge/resources> [Accessed February 2022].

<sup>9</sup> Department for Communities and Local Government. National Planning Practice Guidance. Available online: <https://www.gov.uk/government/collections/planningpractice-guidance> [Accessed February 2022].

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