Land at Draycott, Cam

EIA Scoping Request

Boyer

Prepared on behalf of Persimmon and Robert Hitchins | May 2020

Report Control

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APPENDIX

1. INTRODUCTION

1.1 This Environmental Impact Assessment (EIA) Scoping Report is submitted by Boyer on behalf of Robert Hitchins Limited and Persimmon Homes Severn Valley (referred to hereafter as the 'applicants') who intend to submit separate outline planning applications on adjoining land at Draycott, Cam (the "proposed development site") for a residential mixed use development for up to 1,100 dwellings, new primary school, strategic landscaping and green infrastructure and other associated infrastructure.

1.2 The proposed development site is located at Draycott, Cam within the Stroud District administration area and forms an emerging allocation known as 'PS24 West of Draycott' in the Draft Local Plan Review (November 2019) for a mixed use development for up to 700 dwellings a primary school, strategic landscaping and green infrastructure and associated community and open space uses.

1.3 Whilst the draft allocation is for up to 700 dwellings, we are scoping for up to 1,100 dwellings to allow flexibility and anticipate that this figure of 700 dwellings is likely to increase prior to the adoption of the Local Plan.

1.4 The site area extends to circa 39ha as shown at **Appendix 1**. This land area represents the parameters of the site for the purposes of the EIA Scoping process, within which the proposed development will be delivered. The precise proposals for development at this location will be informed by the pre-application process, community engagement and reflect site specific analysis, responding positively and sensitively to the context of the site.

1.5 Due to the significant scale of the proposed development, a screening opinion has not been requested from Stroud District Council as the proposal clearly constitutes EIA development under the thresholds set by Schedule 2 and Schedule 3 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 ('EIA Regulations 2017') i.e. the development would have significant urbanising effects in a previously non-urbanised area.

1.6 Having established that EIA is required in accordance with thresholds set under relevant regulations, the applicant with regard to the 'EIA Regulations 2017' must compile the information reasonably required to assess the likely significant effects of the proposed development on the environment in the form of an Environmental Statement (ES).

1.7 In accordance with regulation 15(1) of the EIA Regulations 2017, persons minded to make an EIA application may ask the local planning authority (LPA) for their formal written scoping opinion as to the information to be provided in the ES. This Scoping Report is submitted to Stroud District Council ('the LPA') for this purpose.

1.8 In accordance with regulation 15(2) of the EIA Regulations 2017, this Scoping Report includes:

- A plan sufficient to identify the land (at Appendix 1);
- A brief description of the nature and purpose of the development and of its possible effects on the environment (Section 2 and Section 8);
- An explanation of the likely significant effects (Section 8); and

- Such other information or representations as the person making the request may wish to provide or make (Sections 8-10).

1.9 Regulation 15(5) of the EIA Regulations 2017 requires the LPA to provide its scoping opinion within 5 weeks of receipt of this scoping request.

2. PROPOSED DEVELOPMENT

2.1 This section describes the nature and purpose of the proposed development.

Nature of the Proposed Development

2.2 The site comprises approximately 39ha of agricultural land to the west of Draycott forming draft allocation 'PS24 West of Draycott' in the emerging Stroud District Local Plan Review. For the purpose of this Scoping Report the proposed description of development is provided:

2.3 "Provision of up to 1100 dwellings; new primary school; new access points and vehicular, cycle and pedestrian links, strategic landscaping and green infrastructure including areas of informal and public open space and other associated site infrastructure and community uses".

2.4 It is anticipated that the development will come forward via separate outline planning applications relating to land parcels, within the provisions of an overarching ES that covers the wider development area and subject to the scoping opinion being requested.

2.5 Included in the associated infrastructure will be new greenspaces, to be delivered comprehensively through strategic landscaping inclusive of all Green Infrastructure and Open Space. The proposed development will be supported by appropriate physical and social infrastructure to include a new primary school and community infrastructure and uses. Physical infrastructure will comprise new access arrangements and a hierarchy of routes to serve the development and to ensure appropriate accessibility, supporting public transport and non-vehicular based movements, both within and to and from the site. Drainage and other infrastructure improvements will also be provided to serve the development.

2.6 The comprehensive package of social and physical infrastructure will support a sustainable development that is well connected with existing neighbourhoods, whilst ensuring that the proposed development is sensitive and responsive to its local context and setting.

Purpose of the proposed development

2.7 The proposed development provides a positive and deliverable response to identified housing need within Stroud District, in a manner that is supportive of, and gives effect to, the emerging spatial strategy and growth agenda for the District. The proposed development accords with the emerging allocation 'West of Draycott' in the Local Plan Review (Draft Policy PS24).

2.8 The site is recognised in the emerging Stroud Local Plan Review as providing a key strategic residential led opportunity in response to local and strategic growth needs for a suitable and sustainable addition to Cam, which is recognised as a Tier 1 settlement.

Phasing of the Development

2.9 The precise phasing strategy will be developed as the planning applications progress. This will be based on the capacity of existing infrastructure and the delivery of necessary infrastructure requirements that will support development throughout the Plan period in a manner that is consistent with, and likely to be in excess of, the rates of the delivery identified in the Local Plan Review.

2.10 The phasing of development will be supported by commensurate delivery of infrastructure based on analysis of impacts and identification of mitigation measures/solutions.

3. SITE AND SURROUNDINGS

3.1 The proposed development site comprises approximately 39ha of land west of Draycott, Cam (please refer to the enclosed plan at **Appendix 1**). The site is irregular in shape and contains a number of fields, hedgerows and trees. There are also a series of single track roads and paths throughout the site and a dwelling and agricultural buildings in the northern part of the site. Third party land exists centrally containing wooded areas, further dwellings and a storage yard.

3.2 The topography of the land is relatively level with a very gradual slope downwards towards the north. The land varies in agricultural value, varying between 3a and 4 (based upon review of DEFRA maps). The river Cam runs east of the site, but is over 250m away and the Environment Agency (EA) online fluvial flood maps indicate that the Site is not at risk from either tidal or fluvial flooding. The EA Historic Flood Map indicates that there is no evidence of historic flood risk within the Site

3.3 There are no known statutory designations on the land. The nearest listed buildings include Wooded Green Farmhouse (Grade II) located approximately 300m to the south and Goods Shed at Coaley (Grade II) located approximately 200m to the north.

3.4 The land is situated directly west of the A4135 and the existing built area of Draycott and to the east of the M5 Motorway (between Junctions 13 and 14). The site is bound to the south by Everside Lane and Jubilee Fields and to the north the A4135 and railway line. There are a wide range of services and facilities within close proximity of the site including Jubilee Fields (recreation, playing fields and skate park) immediately south, Cam & Dursley train station approximately 500m north east of the site (approximately 1.2km by road) with services to Bristol, Gloucester, and Birmingham. Furthermore, shops and services of Draycott and Cam are located along the A4135.

3.5 The Cotswolds Area of Outstanding Natural Beauty (AONB) sits to the south and west of Dursley and is over 1.5km from the site. In addition, the site lies within the Severn and Avon Vales National Character Area and is within the Settled Unwooded Vale character type.

4. ALTERNATIVES AND SCHEME EVOLUTION

4.1 This section outlines the main alternatives considered and the main reasons for selecting a preferred option, taking into account the environmental effects of the proposed development.

4.2 As noted above, the site is identified in the emerging Local Plan Review for a strategic mixed use development. It forms a key role in the vision for growth and prosperity within the Cam & Dursley area, being tier 1 settlements and the second largest settlement area in the District after Stroud.

4.3 The site has been selected as part of the Local Plan Review allocation process following a rigorous consideration of alternative deliverable options to meet the objectively assessed need. In line with legislation and best practice, this has included a Sustainability Appraisal of each option. The process concluded that the site is a suitable location for development of the scale proposed and, moreover, integral to the ability for the Plan to deliver the required number and type of houses, in addition to other community uses to meet local need.

4.4 Accordingly, the ES will not consider alternative options for the strategic development proposal. Similarly, and in this context, a 'do nothing' scenario will not be considered in the ES as a consequence of the sites identified within the emerging Local Plan Review as an allocation for a strategic mixed use development. This approach is considered to be appropriate in this context and will form the basis of discussion as part of the Scoping process. The only exception(s) to this are where such a scenario is required in particular technical assessments to quantify the changes arising from the proposal compared to the baseline. On this basis, an alternative disposition of uses will not be considered in the ES.

Site Selection

4.5 The site has been identified for allocation in the emerging Local Plan Review under Draft Policy PS24 and to get to such point was considered suitable under the Council's own assessments including Strategic Housing Land Availability Assessment (SHLAA) and the Strategic Environmental Assessment (SEA) of the emerging Plan.

4.6 The Local Plan Review evidence base has assessed the site against alternative options and has found the site and its allocation for housing led development under Draft Policy PS24 to be sustainable.

4.7 Therefore, the land west of Draycott, Cam has been selected as one of the preferred options for growth due to being a strategic site capable of delivering significant numbers of new homes, improved infrastructure, community services and facilities.

Design Options

4.8 The design of the proposed development is an iterative process informed by site specific circumstances. The design process will respond sensitively to the site and surrounding context and will be informed by the a comprehensive technical evidence base, the pre-application process, community consultation/engagement and the findings of the EIA process in terms of impacts and associated mitigation.

5. PLANNING POLICY

5.1 S.38 (6) of the Planning and Compulsory Purchase Act (2004) finds that development should be in accordance with the development plan unless material considerations indicate otherwise. The extant development plan relevant to the proposed development site comprises the Stroud District Local Plan (November 2015).

5.2 The site does not form an allocation within the extant Development Plan. However, the Plan identified Cam and Dursley as a main town and in tier 1 (top tier) of the District's Settlement Hierarchy (Policy CP3), and as such the primary focus for growth and development. Land north east of Cam is allocated for 450 dwellings and 11.4 ha of employment land (Policy SA3).

5.3 Of key relevance is the emerging Local Plan Review (Draft November 2019) as referred to earlier in this report which is a material consideration. It includes the site as a draft allocation known as Policy PS24West of Draycott. Once adopted the emerging Local Plan Review will supersede the existing development plan documents.

5.4 Furthermore the Cam Parish Neighbourhood Development Plan 2019-2031 is advanced having been subject to an independent examination, which concluded on the 20th February 2020 with the recommendation that the plan, once modified, can proceed to referendum. This will also form part of the development plan once 'made'.

5.5 The relevant Draft Planning Policy is PS24 of the emerging Local Plan Review which is outlined below (as worded in the November 2019 Draft):

PS24 – West of Draycott

"Land west of Draycott, as identified on the policies map, is allocated for a strategic mixed use development, including up to 700 dwellings, primary school, strategic landscaping and green infrastructure and associated community and open space uses. Detailed policy criteria will be developed to highlight specific mitigation measures and infrastructure requirements and how development will prioritise walking, cycling and public transport over the use of the private car. A development brief incorporating an indicative masterplan, to be approved by the District Council, will detail the way in which the land uses and infrastructure will be developed in an integrated and co-ordinated manner".

5.6 The emerging Cam Parish Neighbourhood Development Plan 2019-2031 recognises that together with Dursley, Cam Parish represents a significant conurbation and an important second focus for the District, therefore strategic allocations are proposed in Cam Parish in the emerging draft new Local Plan. As such the Parish commits to an early review of the Cam Neighbourhood Plan once the new Stroud Local Plan is in place.

5.7 Furthermore it is acknowledged in the emerging Neighbourhood Plan that land to the north, including the development site area, is less constrained in landscape terms for future development and the M5 forms a strong edge to the west, where it is visible at points when not screened with trees or bunds.

5.8 In summary, whilst the development site is not included in the adopted development plan, it is identified as an area for future growth in the emerging strategy recognising the suitability of this location as a sustainable development and its contribution to the growth agenda and spatial strategy of both Cam and the wider Stroud District.

6. ENVIRONMENTAL STATEMENT

6.1 The ES will be sufficiently comprehensive to ensure that a decision on the project is made in the full knowledge of the likely significant effects of the proposed development on the environment. The ES will be proportionate and not be any longer than is necessary to assess those effects properly.

6.2 There is no statutory provision as to the form of an ES and thus the structure set out in this chapter will be followed.

Structure of the ES

6.3 This section sets out the proposed structure of the ES, which will comprise:

i) Volume 1 - Non-Technical Summary

ii) Volume 2 - Main ES Report

iii) Volume 3 - Technical Appendices

Volume 1 - Non-Technical Summary

6.4 The NTS will follow the structure set out in Table 6.1 below.

Table 6.1: NTS Structure

Chapter No.	Structure	Scope	Consultant
1	Introduction	Proposed development, application site, explanation of EIA and the role and structure of an ES.	Boyer
2	Proposed Development	A description of the nature and purpose of the proposed development as well as phasing of the development.	Boyer
3	Site and Surroundings	A description of the site and surrounding area.	Boyer
4	Alternatives and Scheme Evolution	Outlines the main alternatives considered and the main reasons for selecting a preferred option.	Boyer (Planning) SLR (Design)
5	Main Findings	Reports the results of the EIA, setting out the impacts and the significance of effect of the proposed development on the	All Specialist Consultants

		environment as well as the mitigation proposed and remaining residual effects.	
6	In-Combination and Cumulative Effects	The findings of the in-combination and cumulative effects assessments are summarised.	All Specialist Consultants
7	Conclusion	Overall summary and conclusions of the assessment.	Boyer

6.5 The ‘Main Findings’ section of the NTS which will be drafted by specialist consultants for each topic area and will follow the structure set out in Table 6.2 below.

Table 6.2: Structure of ‘Main Findings’ for Specialist Consultants

Structure	Content
Baseline	A brief description of the key baseline information.
Impact Assessment and Significance of Effect.	A description of the main predicted impacts both positive and negative and their significance of effect on the environment.
Mitigation	A description of the mitigation measures designed-in to the proposed development or proposed to avoid, reduce or remedy the effects of the development on the environment.
Residual Effects	The main residual effects, both positive and negative, on the environment caused by the proposed development are described.
Summary	The overall effect of the development on the topic area will be summarised.

Volume 2 – Main ES Report

6.6 The anticipated structure of Volume 2 of the ES is set out at Table 6.3. The environmental topics ‘scoped in’ to the EIA are included within the table and a brief summary of each chapter’s scope is provided. Environmental topics considered insignificant or ‘scoped out’ are discussed in Section 8 of this Scoping Report.

Table 6.3: Structure of Volume 1 – Main ES Report

Chapter No.	Chapter Title	Summary of Scope
1	Introduction	An overview of the application site, proposed development, requirement for EIA, scope and structure of the ES.
2	Proposed Development and Phasing	A description of the nature and purpose of the proposed development as well as phasing of the development.
3	Site and Surroundings	A description of the site and surrounding area.
4	Alternatives and Scheme Evolution.	Outlines the main alternatives considered and the main reasons for selecting a preferred option.
5	Planning Policy Context	Provides an overview of the local and national planning policy framework.
6	Methodology	Outlines the general methodology used for each topic chapter within the ES unless specific legislation, policy or good practice guidance dictates otherwise.
7	Socio-Economic	The potential impact of the proposed development on human beings is assessed and socio-economic effects.
8	Landscape and Visual	An assessment of the landscape and visual effects of the proposed development.
9	Ecology and Nature Conservation	The baseline ecological and nature conservation aspects of the study area and its environs are presented and the likely impacts of the proposed development upon them are assessed.
10	Cultural Heritage	An assessment of archaeology and cultural heritage assets within the application site parameters are assessed and any relevant mitigation measures are provided.
11	Transport and Access	An assessment of the likely significant effects of the proposed development in terms of vehicle trips, public transport, cycling and pedestrian movements.
12	Air Quality	Provides an assessment of potential impacts related of the proposed development on local air quality.
13	Noise and Vibration	The noise and vibration impact of the proposed development, including construction and operation, within the vicinity of the site.

14	Hydrology, Flood Risk and Drainage	The effects of the proposed development on flood risk, surface water drainage and foul water infrastructure are assessed.
15	Ground Conditions	Provides an assessment of the current ground condition and potential contamination impacts.
16	In-Combination and Cumulative Effects and Mitigation	Presents the findings of in-combination effects (with other topic areas) assessments and cumulative effects (with other developments) in consideration of appropriate mitigation.
17	Conclusion	Provides a summary of the assessment of effects described in Chapters [7 – 16] during the construction, operation [and decommission / demolition phases, where applicable].

ES Chapter Structure

6.7 To ensure consistency throughout the ES Chapters 7 to 16 will follow a standard structure as set out in Table 6.4 below.

Table 6.4: Structure and Scope of Topic Chapters

Structure	Scope
Introduction	Outlines the purpose and scope of the chapter and nature of environmental impacts to be considered.
Study Area	Identification of the study area for the topic specific assessment.
Legislative and Planning Policy Context	Provides a summary of legislation, planning policies and guidance relevant to the topic area being considered.
Methodology	The methodology used for the topic specific assessment will be set out under the following sub-headings: • [Assessment Methodology – only to be included in this section if the methodology in Chapter 3 cannot be followed by a particular topic area.] • Data Collection Methodology (fieldwork undertaken / consultation undertaken / sources of information).
Baseline Conditions	Refers to the existing environmental conditions of the study area and relevant surroundings.

Impact Assessment and Significance of Effects	Identification of likely impacts and whether those impacts occur during the construction, operation and occupation. Methodology relating to sensitivity of receptors and magnitude of the impact. Identifying the 'significance of effects', which relies on the interaction between the sensitivity of the receptor or resource and the magnitude of the impact, for all likely project impacts. Inherent mitigation should be considered prior to assessing the 'significance of effects' as it is a type of mitigation which is designed-in to the proposed development.
Additional Mitigation	Additional mitigation measures are identified to reduce or remedy environmental impacts. Two strands of mitigation measures will be considered at this stage of the process - standard and actionable.
Residual Effects	Refers to potential effects which could occur as a result of the project after additional mitigation measures have been implemented.
In Combination and Cumulative Effects	In-combination and cumulative effects will be considered as follows: • In-combination effects - combined action of a number of different environmental topic-specific effects upon a single receptor or resource. • Cumulative effects - combined action of a number of projects, cumulatively with the project being assessed on a single receptor or resource.
Conclusions	Overall summary and conclusions of assessment.

Volume 3 – Technical Appendices

6.8 Volume 3 of the ES will contain technical assessments undertaken as part of the EIA by specialist consultants and referred to in the Main ES (Volume 2).

6.9 The scope of these technical assessments will be informed by the Scoping Opinion and Scoping Report.

6.10 The structure of these technical assessments is that deemed appropriate by the specialist consultants.

7. METHODOLOGY

7.1 The main focus of the EIA process is the identification and evaluation of impacts and the assessment of 'significance of effects' of a project on the environment. The results and credibility of an EIA depend largely on the methodology used to assess and determine the environmental effects of a project.

7.2 The methodology outlined in this section will form the basis of each topic chapter within the ES unless specific legislation, policy or good practice guidance dictates otherwise. In circumstances where a different methodology is required this will be set out in the relevant chapter.

Identification of Impacts and Assessment of Significance of Effects

7.3 As a result of the scale of development, the proposed development has the potential to create a range of 'impacts' and 'effects' with regard to the physical, biological and human environment. It is therefore necessary to ensure that the potential effects are understood in order to identify appropriate mitigation and avoidance strategies to ensure that the proposed development can be delivered in a sustainable manner.

7.4 The term 'impact' is used within this assessment to define a change that is caused by an action. For example, excavating foundations for new houses (action) during construction leads to increased levels of noise, dust and traffic (impact). Potential impacts will be identified within each chapter relevant to that environmental topic.

7.5 Impacts can be categorised as direct, indirect, secondary or cumulative. They can have positive or negative impacts on the environment. The temporary or permanent nature of an impact and the duration of that impact in the short, medium or long-term can also be relevant to an impact's overall effect. Table 7.1 provides definitions used to describe the nature of identified impacts.

7.6 The term 'effect' is used in this assessment to express the consequence of an impact. For example, excavating foundations for new houses (action) during construction leads to increased levels of noise, dust and traffic (impact), with the potential to disturb noise sensitive receptors such as people or ecological receptors (effect) or congest the local highway network (effect). This is referred to in the ES as the 'significance of effect' and relies on the interaction between:

- The sensitivity of the receptor or resource; and
- The magnitude of the impact.

Table 7.1: Definition of Terms Used to Describe Nature of Impacts

Term	Definition
Positive	Those impacts which have a beneficial impact on the environment.
Negative	Those impacts which have an adverse impact on the environment.
Indirect	Impacts caused by the project later in time or farther removed in distance, but are still reasonably foreseeable.
Secondary	Socio-economic or cultural changes which may be experienced at a point in time that is removed from both direct and indirect impacts.
In-Combination	The impact on the environment can result from individually minor but collectively significant environmental factors on the same receptor or resource.
Cumulative	The impact on the environment can result from individually minor but collectively significant projects taking place over a period of time.
Temporary	An impact where recovery is possible naturally over a short period of time or where mitigation measures can be effective at reversing the impact.
Permanent	An impact where recovery is not possible within a reasonable timescale or where mitigation measures cannot reverse it.
Short-term	Impact is measurable up to 1 year.
Medium-term	Impact is measurable between 1 and 5 years.
Long-term	Impact is measurable greater than 5 years.

Defining Sensitivity of the Receptor and Magnitude of the Impact

Sensitivity of the Receptor

7.7 Receptors are defined as the physical or biological resource or user group that would be affected by the development; this can be informed by the baseline data.

7.8 Each chapter of the ES will define specific scales in relation to the sensitivity of each receptor in a way that is relevant to that topic assessment. These topic-specific scales will draw upon relevant guidance and specialist knowledge relevant to the topic area. When assessing the sensitivity of a receptor or resource the following are taken into account:

- Scale of the receptor or resource - international, national, regional, district, local.
- Vulnerability of the receptor or resource - the susceptibility of a receptor to change.
- Recoverability of the receptor or resource - ability of the receptor to revert to a state close to that which existed pre-development.
- Value of the receptor or resource - importance of the receptor in terms of environment, social or economic.

7.9 The sensitivity of a receptor will be categorised in each environmental chapter according to the following scale:

- Negligible
- Low
- Medium
- High
- Very High

Magnitude of the Impact

7.10 A magnitude will be assigned to all impacts identified in the ES and depends on the degree and extent to which the project changes the environment. In this project impacts are associated with the construction and operational phases of development

7.11 Each chapter of the ES will define specific scales of magnitude of impact in a way that is relevant to that topic assessment. These topic-specific scales will draw upon relevant guidance and specialist knowledge relevant to the topic area. Factors considered in determining impact magnitude include, but are not limited to:

- Spatial extent - the size of the area affected;
- Deviation from baseline conditions – the degree of change as a result of the impact;
- Timing - projects that occur during periods of sensitivity have greater impacts, for example nesting season;
- Duration – duration of the impact is often proportional to the lifespan of the project;
- Frequency of the impact - how often the impact would occur; and
- Reversibility – whether the impact is reversible.

7.12 In order to ensure consistency of approach in the assessment of 'significance of effects' the magnitude of impact will be categorised in each environmental chapter according to the following scale:

- No Change
- Negligible
- Low

- Medium
- High

Assessing Significance of Effect

7.13 The 'significance of effect' relies on the interaction between the sensitivity of the receptor or resource and the magnitude of the impact.

Inherent Mitigation

7.14 Mitigation will usually take place in a continuous cycle as the proposals for development are refined. Mitigation at this stage of the process aims to avoid or reduce environmental impacts.

7.15 Specialist consultants are required to consider three strands of mitigation measures; inherent, standard and actionable. Only inherent (avoid or reduce) mitigation should be considered and included before determining the 'significance of effect'. Inherent mitigation is 'designed-in' to the scheme and is certain to be delivered i.e. what is proposed by parameter plans and the quantum of development.

Significance of Effect

7.16 In order to ensure a consistent approach to this assessment throughout the EIA and to assist the decision-making process a matrix approach has been adopted at Table 7.2.

Table 7.2: Matrix Used for Assessment of Significance Effect

Sensitivity of Receptor	Magnitude of Impact				
	No Change	Negligible	Low	Medium	High
Negligible	Negligible	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	Negligible	Negligible	Negligible or Minor	Minor	Minor or Moderate
Medium	Negligible	Negligible or Minor	Minor	Moderate	Moderate or Major
High	Negligible	Minor	Minor or Moderate	Moderate or Major	Major or Substantial
Very High	Negligible	Minor	Moderate or Major	Major or Substantial	Substantial

Adapted from the Design Manual for Roads and Bridges (Highways Agency, 2008)[1]

7.17 The significance of effect can be identified for all project impacts using the matrix as negligible, minor, moderate, major or substantial. Where a choice of significance of effect has been identified, for example negligible or minor, a view based on professional expertise must be taken to assess which outcome is likely to be closer to the actual significance level.

7.18 Typically, a significance of effect of moderate or greater is considered 'significant' in EIA terms and will normally trigger the need for additional mitigation if that effect is negative. The definition of each significance level is shown in Table 7.3 below.

Table 7.3: General Significance Criteria

Significance	Definition
Negligible	No effects or effects too small to be noticed, within a normal range of variation or within the margin of forecasting error. These effects will not have an influence on the decision making process.
Minor	These positive or negative effects are generally, but not exclusively, raised as local factors. They are unlikely to influence the decision making process, but when identified can be used to enhance the subsequent design of the project. When combined with other effects they could have a more material influence.
Moderate	These positive or negative effects may be important, but are unlikely to be key decision-making factors. The in-combination effects and cumulative effects of such factors may influence decision-making if they lead to an increase in the overall positive or negative effect on a particular receptor or resource with different environmental topic-specific effects or different projects.
Major	These positive or negative effects are considered to be very important considerations and are likely in isolation to be material in the decision making process.
Substantial	Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of receptor or resource integrity. However, a major change in a site or feature of local importance may also enter this category.

[1] The Highways Agency, Transport Scotland, Welsh Government and the Department for Regional Development Northern Ireland: *Design Manual for Roads and Bridges (DMRB) Volume 11: Environmental Impact Assessment* (2008). Available online at: http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section2/ha20508.pdf

Adapted from the Design Manual for Roads and Bridges (Highways Agency, 2008)

Additional Mitigation Measures

7.19 Following the assessment of significance of effect additional mitigation measures aim to reduce or remedy environmental impacts where:

- an environmental effect is deemed 'significant' when including designed-in mitigation, but there are additional mitigation measures available to reduce the level of effect; or
- mitigation has been proposed, but has not yet been confirmed as agreed mitigation (i.e. sign off from regulators, stakeholders etc.).

7.20 Specialist consultants are required to consider standard and actionable mitigation measures within each topic chapter.

Table 7.4: Types of Mitigation

Type of Mitigation	Definition
Standard (reduce)	Standard mitigation reduces the severity of an impact which cannot be avoided entirely. For example, construction mitigation with a high degree of certainty over delivery i.e. measures to be included in a Construction Environmental Management Plan (CEMP).
Actionable (remedy)	Actionable mitigation acknowledges that some adverse effects will stem from the development, but provides a means by which the condition can be improved or compensated for. For example, a controlling mechanism or legal undertaking controlled by the applicant, Council, or statutory bodies with a good degree of certainty over delivery such as planning conditions, s106 and s278 agreements.

Residual Effects

7.21 The residual effects assessment provides a description and assessment of the magnitude and significance of any effects that will remain after the proposed mitigation measures are applied to the application site. These effects may be negative or positive or both.

7.22 Residual effects will conclude with a summary table of identified effects during construction and operation. The residual effects will be described as being of negligible, minor, moderate, major or substantial significance.

In-Combination Effects and Cumulative Effects

7.23 There are no formal definitions within the EIA Regulations 2017 as to what constitutes a 'cumulative effect' and no prescribed methodology on how to assess such interactions between environmental topic areas or other development sites.

7.24 In-combination effects and cumulative effects assessments are limited to a consideration of those residual effects resulting from any phase of the proposed development (construction or operation). Individual effects to be considered 'Minor' or above will be considered as part of these assessments.

7.25 In-combination and cumulative effects are defined as follows:

a) In-combination effects - the combined action of different environmental topic specific impacts upon a single resource/receptor (e.g. how environmental topics including noise, air and visual intrusion impact upon humans (residential)); and

b) Cumulative effects - the combined action of a number of different projects, cumulatively with the project being assessed, on a single resource/receptor (e.g. how four developments within 2km of the application site effect a listed building).

In-Combination Effects

7.26 Specialist consultants will be asked to agree a list of resources/receptors and to confirm whether their environmental topic area would impact on that resource/receptor.

7.27 Specialist consultants will agree an approach to assessing those interactions.

Cumulative Effects

7.28 The projects to be considered as part of the cumulative effects assessment will be agreed with the LPA. The cumulative effects assessment will be undertaken in three steps:

a) Firstly, each specialist consultant will undertake a desk study to establish the Zone of Influence (ZOI) for each environmental topic.

b) Boyer and each specialist consultant will then undertake a desk study of 'other development' for which consent has been sought or granted, those in existence and those which are considered reasonably foreseeable (for example, allocated sites in the development plan) within each ZOI.

c) Each specialist consultant will then create a shortlist of 'other development' for their environmental topic area by applying inclusion / exclusion criteria. This shortlist of 'other development' will then be considered as part of their cumulative effects assessment.

7.29 The significance criteria used to assess likely cumulative effects considers the capacity of environmental resources and receptors to accommodate changes that are likely to occur. The factors considered in assessing the significance of cumulative effects and capacity of the environmental receptor or resource are essentially the same as those used to consider the magnitude of impact and sensitivity of receptor respectively; these factors are set out in preceding paragraphs.

Mitigation as a Result of In-Combination Effects or Cumulative Effects

7.30 If any in-combination effects or cumulative effects are identified as being significant, both standard and actionable mitigation measures must be considered and implemented.

8. SCOPE OF EIA

8.1 This section sets out the scope of each environmental topic where it is considered that significant environmental effects could occur.

8.2 A full consultant team has been established to undertake technical assessment by topic area. The full project team and the topic areas they cover are as follows:

- **Engain** – Ecology and Nature Conservation;
- **RSK** – Air Quality;
- **LF Acoustics** – Noise and Vibration;
- **Jubb** - Transport and Access;
- **Wallingford Hydro Solutions** – Hydrology, Flood Risk and Drainage
- **Hamson Baron Smith** – Ground Conditions;
- **MHP** - Landscape and Visual;
- **Wessex Archaeology** – Cultural Heritage;
- **SLR** – Design, Alternatives, Scheme Evolution and Phasing;
- **Boyer** – Socio-Economic; and Cumulative Effects.

Socio-Economic

Introduction and Context

8.3 The scheme will provide up to 1,100 new dwellings and a primary school in Draycott, Cam. The Socio-Economic chapter will present the findings of the assessment of potential impacts on human beings and the economy. These socio-economic considerations include the effects of the proposed development on: population; housing need; education provision; healthcare provision; emergency services; open space requirements; community facilities and the local economy.

8.4 The proposed development will inevitably increase the resident population of the Stroud District in which it is located. Its location is consistent with the emerging Local Plan Review spatial and housing strategy to meet objectively assessed need by concentrating development at strategic locations in accordance with the settlement hierarchy.

8.5 The ES will assess the socio-economic effects and benefits of the development in this context.

Consultation

8.6 It is intended to consult with Stroud District Council and Cam Parish Council, including relevant officers, stakeholders and other service providers.

Baseline Position

8.7 At present, the undeveloped and agricultural nature of the site contributes modestly to the local area in socio-economic terms. The assessment will include a baseline position taking account of the existing nature of the site and against which the likely implications of the proposed development shall be assessed. Notwithstanding this, the site is contiguous with the established Cam and Dursley built area, within the top tier of Stroud District's settlement hierarchy.

8.8 This baseline position will also include an analysis of socio-economic factors such as health care, education, leisure and recreation, community facilities, emergency services, open space and employment matters.

Methodology

8.9 The socio-economic assessment will take account of the following matters and likely effects associated with the proposal during the construction and operation phases:

8.10 Quantum of development and the type of land use proposed.

- Job creation and employment opportunities created, including during the construction and operation phases of the scheme;
- Direct Gross Value Added (GVA), to quantify the effect of the job opportunities provided on the local economy, leakage, displacement and multiplier effects;
- Contribution towards housing growth (including mix and type, and tenure) required to meet identified need (market and affordable) and population growth in and around the District; and
- Likely effects of the development on existing community infrastructure and services, including health care, education, leisure and recreation, community facilities, emergency services, open space and employment facilities.

8.11 The assessment will identify the principal changes to the circumstances of the existing and proposed communities.

8.12 The assessment will be undertaken using a series of assumptions in terms of the likely population growth and the potential effects this would have on current local services. The assessment will also take into account (or make assumptions about) the number and types of services that are proposed as part of the development. These will be drawn principally from local planning policy, other supplementary planning documents and best practice guidance (for example, Fields in Trust standards) and advice provided by organisations consulted.

Mitigation

8.13 Where appropriate, mitigation measures could be proposed in terms of the types and mix of uses, size of development and housing provision being sought. In addition, mitigation may well include recommendations on phasing, delivery and management.

Landscape and Visual

Introduction and Context

8.14 This chapter of the ES will consider the likely significant effects on landscape character and visual amenity relating to the Proposed Development. Likely significant effects on landscape character and visual amenity may arise directly from change of use, introduction of new features and activities both during the construction and following the completion (operation) of the Proposed Development.

Baseline Conditions

8.15 The Cotswolds Area of Outstanding Natural Beauty is located approximately 1.5 km to the south west of the Application Site at its closest point, where the rising escarpment forms a prominent backdrop to local settlement. The Application Site is formed of a number of small to medium sized agricultural fields presently in arable use. Fields are generally enclosed by established native hedgerows with trees. No Tree Preservation Orders are present within or adjacent to the Site boundary. The Site is bordered by the M5 motorway which runs along the entire north western boundary. Immediately to the south lies the residential edge of Draycott, with the larger settlement of Cam located further south within the Site's visual context.

8.16 The Site lies within the Severn and Avon Vales National Character Area (NCA 106). At the county level the Site is within the Settled Unwooded Vale landscape character type, located within the Vale of Berkeley landscape character area (SV6A). At the District Level the Site lies within the Rolling Agricultural Plain Landscape Character Type (Stroud District Landscape Character Assessment, 2000) and within the LCT5a 'Escarpment Footslopes' sub area.

8.17 Public Rights of Way (footpaths) cross parts of the Site and an area of protected Outdoor Play Space is designated to the immediate south of the Site. A number of residential properties (Draycott) immediately adjoin the south eastern boundary of the Site.

Methodology

8.18 The Landscape and Visual Impact Assessment (LVIA) would be undertaken with regards to industry standards and best practice including:

- Guidelines for Landscape and Visual Impact Assessment (3rd Edition, 2013) - Landscape Institute / Institute of Environmental Management and Assessment;
- Visual Representation of Development Proposals (2019) - Landscape Institute Technical Guidance Note 06/19;
- An Approach to Landscape Character Assessment (2014) - Natural England; and
- An Approach to Landscape Sensitivity Assessment - To Inform Spatial Planning and Land Management (2019) - Natural England.

Identification of Potential Impacts and Potential Significance of Effects

8.19 A landscape character analysis will be undertaken which will involve establishing the nature of the landscape character that currently forms the Application Site, as well as identifying the character of adjacent areas. This analysis will assist in demonstrating the potential on-site and off-site effects of the Proposed Development upon the character of the landscape.

8.20 A visual assessment will be undertaken to determine how the Proposed Development would have a bearing upon the surrounding environment in visual amenity terms. This assessment will involve determining the visibility of the Proposed Development and its effect upon receptors, particularly with regard to public locations including settlement, highways, public rights of way and other public places, including potential views from within the Cotswolds AONB. The assessment will also consider visual effects upon private residential receptors. The visual assessment will examine the effects over the short-, medium- and long-term, i.e. 1-4 years, 5-14 years and more than 15 years. In this regard, the visual assessment will take into account the structural landscape framework proposed, which will be assumed would be in place in year 1. Establishment and growth of the tree cover will be considered as mitigation measures in the visual analysis.

8.21 An approximate area from which the Application Site is visible to a person standing on the ground will be determined through the production of a digital ZTV, review of topographical information, aerial photography and through site visits. A number of views from sensitive visual receptors (accessible to the public), such as from local residential areas, roads and public rights of way will be identified. The location of viewpoints, from which the visual effects will be assessed, will be agreed in advance with SDC and photographs (presented as Visualisation Type 1 TGN 06/19) will be reproduced within the Landscape and Visual ES chapter from each agreed viewpoint to illustrate these views.

8.22 Potential effects of the Proposed Development on landscape character and visual amenity will be identified and assessed in accordance with the recognised professional methodology and guidelines set out in 8.17 Methodology.

8.23 Opportunities to mitigate identified landscape and visual effects will be identified and taken into consideration in the assessment.

Ecology and Nature Conservation

Introduction and Context

8.24 The site consists of nine fields demarcated by hedgerows, set in an agricultural landscape on the edge of the village of Cam. The southernmost fields are managed as pasture grazed by livestock, and the remaining fields are under arable cultivation (**Appendix 2).**

8.25 The site is on an inland edge of the Severn and Avon Vales National Character Area (NCA No. 106) and is relatively typical of the low-lying agricultural areas of this landscape. The Cotswolds National Character Area is to the east, and the site sits on the transition in landscape between the hills and valleys with pasture and woods of the Cotswolds, and the low-lying agricultural plain of the Severn valley and floodplain. Ecologically speaking it is a relatively intensively farmed area with few remaining areas of semi-natural habitat outside of the floodplain grazing marshes associated with the Severn.

8.26 The proposed development has the potential to have ecological effects on a range of receptors. The extent and significance of these effects will be assessed in accordance with all relevant planning policy and guidance, as well as via an ecological impact assessment. The following sections outline the ecological receptors that are likely to be considered in the assessment, and the methodology that will be used to characterise the impacts and effects upon them.

Baseline Position

8.27 There are no designated sites within or adjacent to the proposed development site. The most significant designated sites in the surrounding landscape are the various designations afforded to the River Severn and its associated habitats, largely in relation to their importance for birds.

8.28 The pasture fields of the site consist of improved and semi-improved swards, dominated by grasses with a limited component of broad-leaved herbs. The southernmost field in particular is heavily dominated by perennial rye-grass (Lolium perenne) and has very few associated broad-leaved herbs. The adjacent pasture field is slightly less agriculturally improved, and has a large amount of soft brome (Bromus hordeaceus) and meadow buttercup (Ranunculus acris). Neither field is a Priority Habitat (with reference to The Natural Environment and Rural Communities Act 2006) or a local conservation priority, as this vegetation type is almost ubiquitous across the region. The fields may however have some value for other wildlife, and this is described below.

8.29 The arable fields are largely sown with cereal crops and have very narrow field margins, which are heavily dominated by nutrient-loving plants including barren brome (Anisantha sterilis). Such nutrient-rich margins are unlikely to support any of the arable field-margin plants that are a conservation priority where they occur.

8.30 The boundary hedgerows are relatively uniform in character, and are dominated by a mixture of elm (Ulmus species), hawthorn (Crataegus mongyna) and blackthorn (Prunus spinosa). Most of the hedges have between five and seven woody species on average per 30m section, with frequently occurring shrubs consisting of dogwood (Cornus sanguinea), field maple (Acer campestre) and elder (Sambucus nigra). The field-layer vegetation largely consists of nutrient-loving species and ivy (Hedera helix) although where the hedges face onto the pasture fields (and have consequently received less spray of fertiliser or herbicides), shade-tolerant species including bluebell (Hyacinthoides non-scripta), lords' and ladies' (Arum maculatum) and wood false-brome (Brachypodium sylvaticum) are present. All of the hedges have been flailed, generally to a height of around 1.5m to 2m and are around 1.5m wide. Many of the hedges have mature oak (Quercus robur) or ash (Fraxinus excelsior) trees with stem diameter of around 1m, indicating they may be around 100 plus years old. All of the hedges (except for garden boundaries) qualify as a Priority Habitat, and several of them qualify as 'important' under the botanical criteria of The Hedgerow Regulations 1997 (some may also qualify under the other wildlife or landscape criteria, which will be confirmed over the course of further survey work).

8.31 The site is likely to be home to a range of wildlife, further details of which will be compiled as surveys are completed. A summary of information gathered to date is described here, as well as an assessment of the site's potential for the commoner protected species that may need to be considered in the EIA.

8.32 There are signs of foxes (Vulpes vulpes) and rabbits (Oryctolagus cuniculus) using the site but there are no badger setts within the site boundary. There are records of hedgehogs (Erinaceaus europaeus) from nearby and it is likely that they forage around the edges of the site, particularly where it adjoins gardens. There are no streams or ditches that would provide suitable habitat for otters (Lurtra lutra) or water voles (Arvicola amphibius). Although both of these species are recorded from the surrounding landscape they are not likely to use this site. Although there are no desktop records of dormice (Muscardinus avellenarius) the hedges are good habitat for this species. The floodplain of the Severn and Avon Vales is not especially well wooded, but the nearby Cotswolds landscape has a much higher cover of woodland. It is therefore possible that dormice would be present in the site's hedges.

8.33 The site is suitable as foraging habitat for bats, with the areas of greatest value being the hedges and their associated trees, and the pasture fields. There are records of most of the UK's bat species from within 5km of the site, with the most significant being the presence of greater horseshoe (Rhinolophus ferrumequinum) and lesser horseshoe (Rhinolophus hipposideros) bats. There are roosts of greater horseshoe bats in the relatively nearby locations of Coaley Wood, Jackdaw Mine and Woodchester Mansion **(Appendix 3)**.

8.34 The site is on the outer edge of the likely foraging range of bats at Woodchester Mansion. Species recorded during bat surveys so far have been limited, consisting of the three pipistrelle species, myotis bats and noctule bats (Nyctalus noctula). The site's value for bats is compromised by bright lighting from the suburban area to the southeast, which spills across much of the southern part of the site. The hedges' value is also limited by virtue of them being flailed short, albeit they are relatively species-rich botanically. Further surveys across the season will provide greater detail of the relative value of various parts of the site for foraging bats. Several of the larger mature trees in hedgerows have features where bats could roost.

8.35 There are records of a large number of birds from the surrounding area, including some notable species, particularly as a result of records from Slimbridge wetlands centre to the north. However the intensively farmed arable land and managed hedges are not likely to be of high value to the species of high conservation concern, and are most likely used by commoner farmland birds and possibly small numbers of less common species such as yellowhammer (Emberiza citrinella).

8.36 Slow-worms (Anguis fragilis) and grass snakes (Natrix helvetica) have both been recorded from nearby gardens and open areas, and both could be found around the edges of the site especially where it adjoins gardens. They are less likely to be found in the central parts of the site. It is unlikely that adders (Vipera berus) would be found here, and there are no records of common lizards (Zootoca vivipara) from nearby.

8.37 There are three areas that hold water for at least part of the year within the site boundary, although they are subject to varying degrees of drying out. Commoner amphibians are likely to be found around the edges of the site. There is a record of great crested newts (Triturus cristatus) from a pond adjacent to the site, and from several ponds within the surrounding landscape (**Appendix 4**). This species is present in the landscape around the site, but the only parts of the site that are suitable terrestrial habitat are the hedge bases and the field margins – the vast majority of the site (including the grazed pasture) is unlikely to be used.

8.38 Considering the site's character, its location and context, and the data available to date, it is likely that the ES will assess potential ecological effects on:

- Designated sites;
- Hedges and trees;
- Birds;
- Dormice;
- Bats;
- Reptiles; and
- Great crested newts.

8.39 The scope of the receptors considered in the ES will be kept under review as surveys and assessments are completed, and adjustments will be made if necessary.

Methodology

8.40 Field surveys will be carried out to establish the extent to which the site is important to any valued ecological receptors, including those outlined above and any others that become apparent in the course of the project. All of the field surveys will be completed in accordance with the relevant guidelines and standards set out in the relevant documents.

8.41 The ecological impact assessment methodology will follow the guidance in the Chartered Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment (CIEEM, 2018 – version 1.1 updated September 2019).

8.42 For the ecological assessment, the term 'impact' denotes the physical change caused by the proposals. Such impacts will act upon ecological features either directly or indirectly. The impact acting upon the receptor creates an effect, and the significance of the effect is dependent upon a number of factors, but principally the magnitude of the impact and the sensitivity of the receptor.

8.43 The magnitude of an impact is often quantifiable in terms of, for example, extent of habitat loss or predicted change in feeding opportunities.

8.44 The importance of the identified ecological features (receptors) within the assessment area will be determined based on their spatial level of importance (site, local, national, international). Where possible the determination of the level of importance will consider conservation status information of the habitat or species, and be based upon the professional experience and knowledge of the assessor in line with guidance from the organisations consulted.

Consultation

8.45 The ecological impact assessment will involve consultation with the local authority and may involve consultation with Natural England in regard to potential effects on statutory designated sites. Consultation will be conducted with other stakeholders as required.

Cultural Heritage

Introduction and Context

8.46 The Cultural Heritage chapter will provide an assessment of the potential effects on cultural heritage remains within the Site and a defined Study Area outside of the Site boundary. For the purposed of this Chapter, 'cultural heritage' is defined as archaeological remains (both below and above ground), built heritage and designated assets (Listed Buildings).

8.47 The assessment will be undertaken with reference to national planning policy as set out in the National Planning Policy Framework (NPPF) and specifically Section 16 'Conserving and enhancing the historic environment', along with relevant local policies if applicable.

Baseline position

8.48 For the purposes of this Scoping Report and subsequent ES, the 'Site' comprises the area enclosed by the intended 'red line' planning application boundary.

8.49 An Historic Environment Desk Based Assessment has been undertaken by Wessex Archaeology (2020), which will form the baseline for the Chapter. The assessment considered both identified and potential remains within the Site, and for a 1km radius around the Site boundary, and was undertaken in accordance with relevant standards and guidance published by the Chartered Institute for Archaeology.

8.50 There are no Designated Heritage Assets within the Site. A total of 14 Listed Buildings were identified within the Study Area, all designated at Grade II. These comprised a variety of structures dating from the 17th–19th centuries and including four former farmhouses, three detached properties, one row of terraced cottages indicative of cottage industries related to textile production, a milestone, a church and associated church hall, a goods shed and Gossington Hall and an associated barn.

8.51 The assessment has found that there is an archaeological interest within the site relating to medieval and post medieval agricultural activity and represented as well defined, visible earthworks across much of the proposed development Site. These are considered to be of low significance. On the basis of excavations in proximity to the Site, it is considered likely that these medieval earthworks may overlie buried archaeological remains, which have the potential to relate to Prehistoric activity ranging from Palaeolithic to Romano-British date, and likely to be reflective of settlement activity.

8.52 In addition, the recent discovery of a well-preserved Roman Villa at Box Road, located 500m east of the Site, suggests the focus of this settlement is within the Study Area, and that remains associated with this settlement have the potential to extend into the Site.

8.53 However, the assessment also found that the Western extent of the fields has been subject to historic quarrying, and as such in situ archaeological potential within this area will have either been significantly reduced or removed.

8.54 The assessment concluded that the proposed development is unlikely to result in any adverse impacts to the settings of any designated or non-designated heritage assets within the wider landscape surrounding the site. The Historic Landscape Character of the Site was found to be of limited significance.

Methodology

8.55 In the absence of an industry standard methodology for heritage impact assessment, the assessment methodology to be used will be based upon that outlined in the Highways Agency Design Manual for Roads and Bridges (DMRB Vol.11 Section 3 Part 2, LA106). This is recognised as the most up-to-date and rigorous methodology available for cultural heritage assessment within the Environmental Impact Assessment process.

Identification of Potential Impacts and Potential Significance of Effects

8.56 Potential significant effects as a result of the Proposed Scheme will be described in terms of their deviation from the cultural heritage baseline environment, based upon the Historic Environment Desk Based Assessment as described above. Should any further archaeological investigation be undertaken within the Site, the results will be considered as part of the assessment.

8.57 Significance will be determined based on the relative importance of the heritage assets (receptors) affected and the magnitude of change from the baseline conditions. The magnitude of change will be assessed on a scale (from large to negligible), and the relative importance of the heritage assets will be assessed on a scale of high to negligible. Assessment of significance will be based on professional judgement; definitive assessments will be provided for each effect, along with conclusions.

8.58 Potential impacts upon archaeological remains within the Site during the Construction phase include:

- Damage or destruction to known archaeological remains;
- Damage or destruction to unknown archaeological remains; and
- Impacts may arise via the process of site clearance, demolition of existing structures, construction of new buildings, temporary or enabling works, service connections, hard and soft landscaping, tree planting, improvements to the playing surface, any other intrusive groundworks, including temporary works.

8.59 No impacts are anticipated for the Operational phase upon archaeological remains.

8.60 No significant impacts are predicted upon designated heritage assets, due to distance from the Site, screening as a result of intervening vegetation or development, and topographical differences.

Transport and Access

Introduction and Context

8.61 This chapter of the ES will assess the likely significant effects of the Proposed Development on the environment in respect of Transport and Access. The assessment in this chapter will be based on analysis as provided within an associated Transport Assessment (TA) which would also be produced following a separate scoping submission to the Local Highway Authority.

Baseline Conditions

8.62 The ES Chapter will include a full review of baseline conditions associated with the proposals which will include:

- A review of the accessibility to and from the site via sustainable modes and a review of facilities that are an accessible distance of the site;

- A review of current site access points;
- Details of existing highway connections to and from the site;
- An assessment of existing collision records on the highway network in the vicinity of the proposals; and
- Details of the scope and source of baseline traffic flows associated with the local traffic network and a subsequent review of baseline highway capacity. In addition, assumptions relating to the calculation of forecast year traffic flows will also be identified which will be used as the baseline to assess the subsequent magnitude of change associated with the development proposals.

Methodology

8.63 The significance of potential traffic implications will be assessed adopting the principles developed from best practice. The effect of significance will be derived from measuring the magnitude of change and the sensitivity of the receptors affected. Categories of sensitivity and magnitude are defined and assessed to determine the significance of the effect.

8.64 In line with the Institute of Environmental Assessment (IEA) guidance, the following key traffic related environmental effects are considered relevant in this assessment:

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

8.65 The criteria used to determine the magnitude of each of the potentially significant traffic-related environmental effects described above is based on the advice provided within the IEA guidelines, which is summarised below:

Severance

8.66 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. The IEA guidelines point to thresholds outlined in the Manual of Environmental Appraisal (MEA) that state that a 30% change in traffic flow is likely to produce a slight change in severance, with moderate and substantial changes occurring at 60% and 90% respectively. However, it is noted that IEA guidance states that these figures "have been derived from studies of major changes in traffic flow and therefore should be used cautiously in any environmental assessment. The assessment of severance should pay full regard to specific local conditions, e.g. whether crossing facilities are provided or not, traffic signal settings, etc.

8.67 In addition, IEA guidance also states that the "measurement and prediction of severance is extremely difficult. The correlation between the extent of severance and the physical barrier of a road is not clear and there are no predicative formulae which give simple relationships between traffic factors and levels of severance". Thus, the assessment of severance will be undertaken based on professional judgement taking into account quantitative factors (i.e. increase in traffic flow) and qualitative factors (surrounding pedestrian and traffic environment).

Driver Delay

8.68 Delay to drivers generally occur at junctions where opposing vehicle manoeuvres are undertaken with vehicles having to give or receive priority depending upon the type of junction arrangement. The IEA guidelines indicate that the delays are only likely to be significant when the existing highway network is already running at or close to its theoretical design capacity. Although evidently even in a congested area a low level of traffic can still have negligible change in terms of magnitude. Thus, any assessment of driver delay will not only consider whether key junctions are operating within capacity but will also consider the relative change in operation from future year baseline levels.

Pedestrian Delay

8.69 The delay incurred by a pedestrian is generally a direct consequence of their ability to cross roads. The IEA guidelines do not recommend establishing a quantitative threshold to assess the level of, and changes in, pedestrian delay, but state that professional judgement should be used to assess this in this instance. On this basis the assessment will provide a professional view in this regard with appropriate written justification.

Pedestrian Amenity

8.70 Where the increase in transport trips associated with the Proposed Development could have a change to the perceived amenity through increased noise, pollution or congestion that may detract from the existing environment. It is noted that the IEA suggests that a tentative threshold for judging the significance of changes in pedestrian amenity would be where traffic flow (or its lorry component) is halved or doubled. However, it is evident that the change in respect to pedestrian amenity can be subjective and therefore some professional judgement is required to assess this aspect, which will also be applied in this regard.

Accident and Safety

8.71 Where a development is expected to change the current composition, volume and speed of the traffic as well as pedestrian activity along the adjoining highway network, a Personal Injury Accident Study should be carried out to assess the potential significance of accident risks. The ES chapter will therefore include an assessment, based on professional judgement, that considers the likely impact in terms on safety in consideration of historic collision records, forecast changes in traffic flow and network operation, and potential uplift of other users such as pedestrians and cyclists.

Fear and Intimidation

8.72 The scale of fear and intimidation experienced by pedestrians is dependent on the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths as well as factors such as the speed and size of vehicles.

8.73 There is no commonly agreed threshold by which to determine the significance of this effect. IEA guidelines note previous work that has been undertaken which puts forward thresholds that define the degree of hazard to pedestrians by average traffic flow, however, these thresholds do not take account of the nearby environment in terms of footway provision and pedestrian facilities. In addition, the thresholds only assess Fear and Intimation based on total flows and therefore do not provide an indication of changes to Fear and Intimidation. Thus, as with severance, the assessment of fear and intimidation will be undertaken based on professional judgement taking into account quantitative factors (i.e. increase in traffic flow) and qualitative factors (surrounding pedestrian and traffic environment). This is in accordance with IEA guidelines which states that there will be "need for judgement to be exercised in determining the degree of fear and intimidation".

Identification of Potential Impacts and Potential Significance of Effects

Receptors and Receptor Sensitivity

8.74 IEA guidelines recommends that particular groups, or locations, which may be sensitive to changes in traffic conditions are identified. The types of receptor that would be sensitive to change are set out below:

- Open space;
- Tourist/visitor attractions;
- Historical Buildings;
- Churches;
- Hospitals, surgeries etc.;
- Parks and recreation areas;
- Shopping areas;
- Roads with narrow footways;
- Educational Facilities;
- Retirement / care homes;
- Roads without footways; and
- Areas of highway collision cluster

Significance of Effects

8.75 The calculation of significance will be undertaken by cross correlating the magnitude of change with the sensitivity of nearby receptors as set out in Table 7.2. This assessment will take into account the geographical location of receptors in relation to the assessed highway network.

Air Quality

Introduction and Context

8.76 It is proposed that the ES will include a chapter on Air Quality. This section of the report sets out the potential methodology for the assessment of the air quality effects of the proposed development.

8.77 The purpose of the Air Quality section of the EIA is to describe (and, where possible, quantify) the likely impact that the proposed development will have on local air quality as a result of any increase in emissions from road traffic and the impact of existing and future levels of air pollution on the proposed development.

Baseline Conditions

8.78 Existing or 'baseline' air quality refers to the existing concentrations of relevant substances present in ambient air. These substances may be emitted by various sources, including road traffic, industrial, domestic, agricultural and natural sources.

8.79 For a scheme of this nature, it is envisaged that the main potential source of air pollution will be from road traffic, both existing and that generated by the proposed development. The principal pollutants relevant to this assessment are considered to be nitrogen oxides (NOx), nitrogen dioxide (NO2) and particulate matter (PM10 and PM2.5), which are generally regarded as the most significant air pollutants released by vehicular combustion processes, or subsequently generated by vehicle emissions in the atmosphere through chemical reactions.

8.80 Baseline air quality data employed in this study have been obtained from automatic and passive monitoring stations maintained by Stroud District Council and from the local air quality management (LAQM) Support website operated by Defra (http://laqm.defra.gov.uk).

8.81 Monitoring is undertaken by local authorities to determine whether air pollution within their jurisdiction complies with prevailing air quality standards (AQSs) and objectives (AQOs). Table 8.1 identifies the AQSs and AQOs applicable to NOx, NO2, PM10 and PM2.5, and Table 8.2 outlines the locations at which they should apply.

Table 8.1: Air Quality Objectives Relevant to the Proposed Development

Substance	Averaging period	Exceedances allowed per year	Ground level concentration limit (µg/m^3)
For the protection of human health			
NO_2	Annual	-	40
	1 hour	18	200
PM_{10}	Annual	-	40

	24 hours	35	50
$PM_{2.5}$	Annual	-	25
For the protection of vegetation and ecosystems			
NO_x	Annual	-	30

Table 8.2: Locations Where Air Quality Objectives Should Apply, replicated from LAQM TG.16

Averaging period	Locations where AQOs should be applied	Locations where AQOs should not be applied
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes, etc.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24-hour mean and 8-hour mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties*	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1-hour mean	All locations where the annual mean and: 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more.	Kerbside sites where the public would not be expected to have regular access.

	Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	

Notes: * Such locations should represent parts of the garden where relevant public exposure to pollutants is likely, for example where there is seating or play areas. It is unlikely that relevant public exposure to pollutants would occur at the extremities of the garden boundary, or in front gardens, although local judgement should always be applied.

8.82 Stroud District Council has no declared Air Quality Management Areas (AQMAs). According to its 2019 Annual Status Report, there were 2 automatic stations and 22 diffusion tube sites operational in 2018. The annual average NO2 concentrations at diffusion tube monitoring locations within 7km of the proposed development are presented in Table 8.3. Neither of these diffusion tubes breached the annual mean objective in 2018. However, in 2018 Stroud District Council set up the two automatic stations monitoring PM10 and PM2.5; both sites are within 13km of the proposed development. None of the PM10 or PM2.5 objectives were breached at either site.

Table 8.3: Annual Average Measured NO2 Concentrations (µg/m3) at Monitoring Sites Nearest to the Proposed Development Site

Site ID	Site Name	Site Type	Approximate distance from proposed development (km)	2018 Annual Average NO_2 ($\mu g/m^3$)
37	Grove Lane, Westend	Other	6.6	20.3
41	Stonehouse, Downton Road	Roadside	6.9	25.2
Air quality objective				40

8.83 Estimated background air quality data is also available from the LAQM website operated by Defra. The Defra LAQM website provides estimated annual average background concentrations of NOx, NO2, PM10 and PM2.5 on a 1km2 grid basis.

8.84 Table 8.4 presents the estimated annual average background NOx, NO2, PM10 and PM2.5 concentrations at the proposed development site for 2020. The estimated background concentrations are below the relevant air quality objectives.

Table 8.4: LAQM Estimated Annual Average NOx, NO2, PM10 and PM2.5 Concentrations at Proposed Development Site for 2020

Assessment Year	Estimated Annual Average Pollutant Concentrations from the UK-AIR Website (µg/m^3)			
	NO_X	NO_2	PM_{10}	$PM_{2.5}$
2020	16.3	12.0	13.7	8.6
Air quality objective	30	40	40	25

Notes: Presented concentrations for 1km2 grid centred on 374500, 201500; approximate centre of development site is 374457, 201496.

8.85 The M5 runs adjacent to the boundary of the proposed development site. The motorway is expected to carry significant volumes of traffic, which may have the potential to affect ambient air quality at the site. As none of the monitoring undertaken by Stroud District Council is located in the vicinity of the M5, it is expected that ambient pollutant concentrations (particularly annual mean NO2 concentrations) may be higher than is represented in either the Stroud District Council or LAQM Support air quality data. RSK has therefore agreed with Stroud District Council that air quality monitoring will be undertaken to estimate NO2 levels at specific locations across the site.

Methodology

8.86 Effects on amenity, human health and ecosystems as a result of dust from fugitive dust generated by construction-related activities.

8.87 It is anticipated that dust and particulate matter emissions produced during construction activities would be controlled through the implementation of a CEMP. The CEMP will either include a section on controlling dust and emissions or will be supplemented by a dust and air quality management plan (DAQMP). Any mitigation measures recommended to control dust and monitor the residual effects of dust on receptors will be recommended following completion of a dust risk assessment, prepared in accordance with the '*Guidance on the assessment of dust from demolition and construction*' (Institute of Air Quality Management (IAQM), v1.1 2014. These mitigation measures would be considered an integral part of the proposed development. Therefore, effects of dust and particulate matter emissions are unlikely to be considered significant and can therefore be scoped out of the ES.

Construction-related Vehicle Exhaust Emissions

8.88 The operation of plant, goods vehicles, and vehicles used by site personnel, will result in the emission of exhaust gases containing the pollutants NOx, PM10, volatile organic compounds, and carbon monoxide. The quantities emitted depend on factors such as engine type, service history, pattern of usage and fuel composition.

8.89 Vehicle and plant movements will result in emissions to atmosphere of exhaust gases. The *Land-Use Planning & Development Control: Planning For Air Quality* guidance (Environmental Protection UK & the IAQM, v1.2 2017) ('the EPUK-IAQM guidance') indicates that an 'air quality assessment' may be required where a development causes a change in vehicle movements by more than 500 per day, or 100 heavy duty vehicle movements per day. It is assumed that construction vehicles will route via the A4135 and it is not anticipated that the EPUK-IAQM guidance thresholds would be exceeded for any individual road during the construction phase. Therefore, the effects of construction-vehicle exhaust emissions are unlikely to be considered significant and can therefore be scoped out of the ES.

Operational Phase Vehicle Exhaust Emissions

8.90 It is expected that no significant stationary sources (for example, combined heat and power plant or large boilers) are proposed or located within the vicinity of the site. Therefore, the key air pollutants of concern for operational phase impacts for human health are expected to be NOx, NO2, PM10 and PM2.5 associated with road traffic. In order to quantify potential air quality impacts at receptor locations during the operational phase of the development, three scenarios will be assessed using an advanced dispersion model ADMS-Roads and hourly sequential meteorological data. The scenarios are as follows:

- 'Base case' scenario representing the 'existing' air quality situation in 2020;
- 'Without Development' scenario (the expected year of full operation, without the proposed development in place but including any committed/consented development of which RSK are made aware); and
- 'With Development' scenario (the expected year of full operation with the committed/consented developments of which we are made aware and the proposed development in place).

8.91 The assessment will be carried out with reference to the impact magnitude EPUK-IAQM guidance. Consideration will also be given to the effects of baseline ambient air quality on future site users, corroborating modelled pollutant concentrations with on-site air quality monitoring. The detail of the methodology has been agreed with the Environmental Health Officer separately.

8.92 A review of Defra's MAGIC maps website was undertaken to identify designated ecological sites. It is noted that the closest SSSI (Stinchcombe Hill) is located approximately 2.5km from the site. Assessment of ecological receptors may be required following receipt of the required traffic data (following the IAQM 2019 document, *A guide to the assessment of air quality impacts on designated nature conservation sites*). The IAQM 2019 guidance references the Design Manual for Roads and Bridges which states that if a designated site is within 200m of an affected road (as defined in the DMRB, e.g. daily traffic flows will increase by >1,000 annual average daily traffic (AADT) or more; heavy duty vehicle flows will change by 200 AADT or more), it will need to be considered in the assessment. If required, a number of locations in the designated site may be included within the modelling assessment.

Identification of Potential Impacts and Potential Significance of Effects

8.93 The following potential impacts have been identified and will be assessed regarding the operational phase:

- Human health (existing and proposed human receptors) impacts of additional vehicle exhaust emissions in addition to existing baseline NO2, PM10 and PM2.5 concentrations.
- Ecological designated site (depending on traffic data) impacts of additional vehicle exhaust emissions in addition to existing baseline NOx concentrations.

8.94 Where significant effects are identified, mitigation measures will be recommended to reduce any effects identified.

8.95 Construction phase impacts of the proposed development are likely to be suitably controlled with implementation of appropriate mitigation measures. Whilst not significant, construction phase effects will be considered within the Air Quality Technical Appendix.

Noise and Vibration

Introduction and Context

8.96 An assessment of the potential noise and vibration effects of the Proposed Development during construction and operation will be conducted and reported within the ES.

8.97 Noise levels within the Proposed Development are primarily influenced by road traffic, which has the potential to impact upon the occupants of the proposed dwellings and an appropriate design will be required to ensure any potential adverse impacts are minimised.

8.98 The construction and future operation have the potential to impact upon existing noise-sensitive receptors within the surrounding area, principally associated with the construction plant and future increases in road traffic.

8.99 The noise and vibration chapter will consider the potential effects.

Baseline Conditions

8.100 Noise levels within the application site are predominantly influenced by road traffic from vehicles travelling along the M5 to the west and the A4135 to the east. A railway line runs to the north of the site, which carries low volumes of local passenger traffic.

8.101 At the present time, baseline noise and vibration levels are unusually low, as a result of the pandemic. Any baseline monitoring undertaken currently would therefore be unrepresentative of normal conditions.

8.102 The institute of Acoustics have provided guidance on the availability of baseline data and presently recommend the use of alternative approaches where this is possible, to derive typical conditions.

8.103 For the Proposed Development, noise and vibration monitoring was carried out in 2018, within the northern part of the application site, which comprised noise monitoring adjacent to the M5, A4135 and noise and vibration monitoring adjacent to the railway line. This data is considered representative of normal conditions and would be used to derive baseline levels within this area of the site and to enable levels across the site to be established.

8.104 It is proposed to model the road traffic noise levels across the site, utilising recent traffic flow data obtained under normal conditions, which would be validated against the previous noise monitoring results. This would provide a robust means of establishing the baseline noise environment across the site.

Methodology

8.105 As discussed above, it is proposed to model the noise levels across the site utilising proprietary software to determine the current noise environment. This model would be used to derive future noise levels within the Proposed Development, taking account of future road traffic flows and incorporating indicative noise mitigation measures, where applicable.

8.106 Given that the noise levels across the site will have been based upon calculation, it will be recommended that further detailed noise assessments are undertaken at a later stage forming part of the reserved matters applications, to finalise any noise mitigation requirements.

8.107 Legislation and guidance documents to be used in the assessment will include:

- World Health Organisation - Guidelines for Community Noise 2000;
- Department of Transport - Calculation of Road Traffic Noise 1988;
- BS8233: 2014: Guidance on Sound insulation and noise reduction for buildings;
- BS4142: 2014+A1:2019: Methods for rating and assessing industrial and commercial sound;
- BS5228-1:2009+A1:2014 and BS5228-2:2009+A1: 2014: Code of Practice for Noise & Vibration Control on Construction and Open Sites;
- Institute of Acoustics / Chartered Institute of Environmental Health. ProPG: Planning and Noise. Professional Practice Guidance on Planning and Noise. New Residential Development. May 2017 (ProPG);

Identification of Potential Impacts and Potential Significance of Effects

Construction

8.108 During construction, there will be a number of potential sources of noise and vibration. Based upon likely construction plant, anticipated noise levels will be predicted at the nearest sensitive locations using the methodology set out in BS 5228-1:2009+A12014 'Code of Practice for Noise & Vibration Control on Construction and Open Sites' . The assessment will be based upon the level of construction information available at the present time.

Site Suitability

8.109 In accordance with the relevant national and local guidance, the suitability of the proposed uses (e.g. dwellings) within the development area would be considered with respect to the prevailing noise climate which is expected to be dominated by road and rail.

8.110 Where appropriate, and based upon the results of the baseline assessment, noise mitigation measures would be identified within the proposed residential areas of the development, which would seek to ensure a satisfactory noise environment was achieved.

8.111 Traffic Noise

8.112 Changes in traffic noise on the local roads surrounding the development will be based on changes in traffic flow, speed and percentage of heavy goods vehicles. The changes will be assessed for the operational phases, using data from the Transport Assessment. The standard method used to predict traffic noise levels in the UK is the Calculation of Road Traffic Noise (CRTN).

Hydrology, Flood Risk and Drainage

Introduction and Context

8.113 This chapter, which was prepared by Wallingford HydroSolutions, presents an assessment of the likely Water Resources and Flood Risk effects of the proposed Development.

Baseline Conditions

8.114 The Site is situated within two river catchments. This includes the River Cam, which is located to the east of the site boundary, and an unnamed watercourse to the northwest of the site boundary, which discharges to the Lighten Brook (and eventually to the River Severn via the Gilgal Brook). Most of the Site naturally drains to the unnamed watercourse to the northwest, however the natural flow pattern to this watercourse is interrupted by the M5 highway and railway line, which enclose the Site to the north and west.

8.115 A culvert has been identified under the M5 (details to be confirmed following a further site survey) which connects to this unnamed watercourse to the west, which presently is thought to drain a significant portion of the Site (fed by field drains along the borders of the existing agricultural plots).

8.116 There are no major lakes or reservoirs within the immediate vicinity of the Site. Two minor ponds have been identified in the northern corner of the Site

8.117 A review of the Environment Agency (EA) online fluvial flood maps indicate that the Site is not at risk from either tidal or fluvial flooding. The EA Historic Flood Map indicates that there is no evidence of historic flood risk within the Site, though there is evidence of flooding from the River Cam, extending to within 70m of the southern site boundary.

8.118 The EA pluvial flood maps indicate that the Site naturally drains towards the north, with existing flow routes across the Site apparent from flood maps, emanating both from within and from outside of the Site boundary. This surface water flow route is shown to then accumulate along the northern boundary of the Site, backing up against both the M5 highway and railway line. There are ditches within the Site boundary which serve to divert surface water towards the culvert under the M5.

8.119 The British Geological Survey (BGS) online mapping service indicates that the Site is underlain by the Charmouth Mudstone Formation, which is overlain by Cheltenham sand and gravel superficial deposits. More information is provided in the following Section on Ground Conditions.

8.120 The EA waterbody classifications indicate that the Site is entirely within the Gilgal Brook Catchment (from source to the Severn River Estuary). Water quality in this catchment area ranges from good (chemical status) to moderate (ecological and overall status). The reason given for not achieving 'good' status for the latter relates to phosphate levels as the classification element, with both poor nutrient and livestock management (both a diffuse pollution source) cited as reasons for the 'moderate' classification.

8.121 The Site is not located within a groundwater Source Protection Zone (SPZ). The Site is however located in a Drinking Water Safeguard Zone (non-statutory areas influencing respective Drinking Water Protected Areas, where action to address water contamination will be targeted).

Methodology

8.122 The following legislation and guidance will inform the assessment process:

- The Water Framework Directive (WFD 2000/60/EC);
- Flood and Water Management Act 2010;
- Water Act 2014;
- Pollution Prevention and Control (England and Wales) Regulations 2000;
- Water Supply (Water Quality) Regulations 2018;
- Private Water Supplies (England) Regulations 2016;
- National Planning Policy Framework (NPPF); and
- Relevant Guidance for Pollution Prevention (GPP).

8.123 The assessment will comprise the following elements:

- The baseline will be described and presented drawing upon a combination of desk-based sources.
- The Site will be assessed for flood risk in line with NPPF guidelines, with the production of a comprehensive Flood Risk Assessment (FRA) which will be appended to the ES.
- The effect of the Development upon surface water run-off produced during storm events will be assessed by appropriate methodology (ReFH2) relative to the baseline site conditions, whereby the greenfield runoff rates will be compared to runoff rates accounting for increased impermeable area.

- On-site surface pluvial flood risks will be managed through use of SuDS's and provision of suitable overland exceedance flow routes where the network is exceeded. The SuDS network will also address potential concerns relating to downstream flood risk and pollution from surface water runoff.
- Impacts will be avoided as much as possible through the design process, and where this is not feasible, appropriate mitigation measures will be proposed to ensure potential impacts are minimised.
- A foul drainage strategy will be prepared, and an assessment of effects undertaken.
- So long as appropriately designed measures are implemented, it is not envisaged that ongoing monitoring of water quality from the Site is required.

Identification of Potential Impacts and Potential Significance of Effects

8.124 The EIA will address the following likely effects during construction:

- The potential for reductions in water quality through sedimentation, accidental release of pollutants and changes to in-stream hydrochemistry;
- The potential for the disturbance of soils which have previously been heavily fertilised, thereby increasing runoff of nitrogen and phosphates; and
- Potential risks associated with other sources of pollution to surface waters as a result of construction activities and processes.

8.125 The EIA will address the following likely effects after completion / during operation:

- An increase in impermeable areas, which may impact upon surface water run-off and consequently surface water flood risk to third parties;
- Pending the outcome of infiltration testing (an alternative to discharging to surface water), a greater portion of the site may be drained towards the unnamed watercourse to the west, thereby increasing the natural catchment area. The potential effects and mitigation to this will be addressed within the EIA and surface water drainage strategy.
- The proposed Development has the potential to result in effects to water quality and flood risk of the surface water in the draining sub-catchments. Flood risk to future occupants of the proposed Development will also be considered within the assessment.
- Potential risk of pollution and sediment generation to surface water bodies and groundwater bodies from operational activities (including highway infrastructure / car parking); and
- Effects upon foul drainage and potable water infrastructure, including consultation with the water and sewerage service provider (Severn Trent Water).

Ground Conditions

Introduction and Context

8.126 This scoping section has been prepared by Hamson Barron Smith Limited to set out the methodology for the assessment of the Proposed Development on ground conditions, with respect to geological and geomorphology conservation, unstable ground and land contamination.

Baseline Conditions

Geology

8.127 British Geological Survey (BGS) mapping indicates that in general the site is underlain by superficial deposits comprising of the Cheltenham Sand and Gravel Deposits these are underlain by the bedrock geology of Blue Lias Formation and Charmouth Mudstone Formation (undifferentiated).

8.128 The superficial deposits are absent from a north south running strip in western side of the site, here the Blue Lias Formation and Charmouth Mudstone Formation isare mapped as present.

8.129 There are no designated geological or geomorphological sites or features of conservation value in the area affected by the proposed development.

Hydrogeology

8.130 Cheltenham Sand and Gravel Deposits are classified by the Environment Agency (EA) as Secondary A Aquifers.

8.131 The Blue Lias Formation and Charmouth Mudstone Formation (undifferentiated) are classified by the EA as Secondary (undifferentiated) Aquifers.

8.132 The depth to groundwater is not known. A walk over of the site by Hamson Barron Smith in November 2019 noted that extensive water logging water was present across the site and water was present in thea pond in the north east of the site at circa 0.3m bgl. Shallow groundwater was therefore envisaged.

8.133 The site is not located in a source protection zone (SPZ).

Hydrology

8.134 Two small drains are present in the site, these flow north / north west. Surface water bodies are also present to the north west of the M5. Further details on the site hydrology are provided in Section on Hydrology, Flood Risk and Drainage.

Land Use

On site

8.135 The site has been agricultural fields since first mapped in the late 1880s with little to no change noted.

8.136 A small gravel pit was present on the on the western edge of the site. This is not recorded after 1901 – 03, it is assumed that this was infilled. A small possible pond was present centrally in the site. This is no longer mapped after 2010, again it is assumed this has been infilled.

8.137 During the construction of the M5 in the 1970s the southern and western fringe of the site appears to have been used as part of the construction area. Aerial photographs suggest that this section of the site was used for stockpiling of materials. During the walkover of the site, undulating lands were noted in the south west corner of the site, consistent with earthworks.

Off Site

8.138 The surrounding land use was typically undeveloped farmland. A mill and associated pond was present to the south east of the site, this was present until the mid to late 1940s. This area went on to be developed as a business park, within which a number of small tanks are noted. By the early 1980s a garage had been constructed to the south east.

8.139 A rail line abutted the north eastern corner of the RH lands until the early 1980s when it was mapped as dismantled.

8.140 Aerial Ariel photography indicates that the lands to the west appear to have been used as part of the construction area for the M5 and construction area.

Land Contamination

8.141 The presence and risk of soil contamination is, given the agricultural use of the site, considered low across the majority of the site. Localised point sources resulting from the backfilling of the ponds / pits and leakages / spills from the adjacent petrol station may however be present and the presence of Made Ground associated with the use of southern / western fridge during the construction of the M5 cannot be discounted.

8.142 The majority of the site is underlain by superficial sand and gravel deposits which are classified as a Secondary A Aquifer, in which shallow groundwater is envisaged. However, the site is not located within a source protection zone and there are no groundwater abstractions within 250m of the site. Furthermore sources of contamination are limited. It is therefore considered that risks of contamination of groundwater across the majority of the site is low.

8.143 Surface waters (drainage ditches) are present with within the lower lying central area of the site. Given the distances of these ditches from the identified and limited sources of contamination risks to surface waters are considered low.

Landfill Gases

8.144 The area to the west of the site, now used as playing fields, has been subject to landfilling. Waste type recorded included Inert, Industrial, Commercial, Household with landfilling ceasing by 1975. Infill materials may have the potential to act as a source of soil and groundwater contamination and or ground gas, which may have the potential to migrate and impact on the southern / western portion of the site.

Radon

8.145 The site is in an area where the estimated probability of homes being above the action level of 200Bqm-3 is less than 1%. Therefore, no radon protective measures are required in the construction of new buildings.

Methodology

8.146 The ES will consider the potential environmental effects from the development relating to the geology and ground conditions. Consideration will be given to the potential indirect effects on human health, the environment and the proposed development with respect to ground contamination.

8.147 The assessment will be based on a desk-based Phase 1 Preliminary Land Contamination and Geotechnical Risk Assessment that will be included as an appendix to the Environmental Statement. The Phase 1 Assessment will include a site reconnaissance, review of historical maps and records and identification of potential contaminant sources, pathways and receptors that may be present on the site, the report will present a preliminary Conceptual Site Model (CSM) together with a qualitative assessment of the risks and hazards associated with existing or potential future soil, ground water contamination and hazardous gases in the ground.

8.148 Following completion of the desk based assessment a site specific intrusive ground investigation will be carried out. The purpose of the ground investigation is to confirm the ground conditions and to target potential sources of contamination identified in the Phase 1. The ground investigation will include laboratory testing of soils and waters and gas / groundwater monitoring near the boundary with the area of landfilling. The findings of the ground investigation will be presented in a Ground Investigation Report (GIR), this will refine the CSM, determine the need for further investigation or remedial works and inform the implementation of mitigation measures in the design of the proposed development. The report will also provide details in relation to geotechnical aspects of the development.

Identification of Potential Impacts and Potential Significance of Effects

8.149 The potential ground conditions and contamination impact on the environment will be assessed for both construction and operational phases.

Construction Phase

8.150 Potential construction phase environmental effects identified relating to ground conditions are as follows:

- Direct and indirect exposure of construction workers to existing soil, groundwater and gaseous phase contamination;
- Direct and indirect exposure of public to existing contamination, e.g. airborne migration and subsequent dermal contact and ingestion;
- Cross contamination of soil during earthwork operations;
- Contamination of groundwater due to aggressive earthwork operations;
- Release of entrained sediment or diffuse contamination to surface waters due to earthworks and construction activities; and
- Contamination of soils / groundwater due to potential spillage of fuels oils and site stored materials during construction activities.

Operational Phase

8.151 Potential operational phase environmental effects identified relating to ground conditions are as follows:

- Direct and indirect exposure of future users to existing contaminated soils, waters or ground gases;
- Direct and indirect exposure of flora and fauna to existing contaminated soils, waters or ground gases; and
- Contamination of soils / groundwater and surface due to leakages of fuel oils, general operational spillages and other contaminants from within the proposed development.

9. TOPICS SCOPED OUT

9.1 Due to the significant scale of the proposed development there are a wide range of effects and as such there are few topic areas to be scoped out completely. Those that we can consider can be omitted from the ES, due to relevant detail being provided through other means, are outlined in this chapter. This will be subject to confirmation as part of the Scoping process.

Agriculture and Soil Resources

9.2 The proposed development site is predominantly land in agricultural use and according to online DEFRA maps parts of the land constitute best and most versatile land. In consideration of developing greenfield sites, and more specifically agricultural land, Paragraph 170 of the NPPF states:

9.3 “Planning policies and decisions should contribute to and enhance the natural and local environment by… 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”

9.4 Stroud District Council have assessed the development potential of the land in the process of allocating the site in the emerging Local Plan Review. In determining the sites potential for allocation the Council would have taken the view that the land is relatively unconstrained for instance in landscape terms and that the benefits of development including addressing housing need, outweighed any loss of agricultural land on this site.

9.5 For these reasons and given the principle of development of this land has been considered as part of the emerging Local Plan Review, it is considered that Agriculture and Soil Resources can be scoped out of the ES.

Waste

9.6 Both the construction and operational phases of the proposed residential led development will generate waste. A clear understanding of what waste will arise, and how it will be managed, will therefore ensure both environmental impacts and costs are considered and minimised.

9.7 A combination of the size and nature of the development proposed means that waste generation is unlikely to be a significant issue requiring consideration in the ES.

Utilities

9.8 A detailed assessment of utilities is not proposed to be provided within the ES as it is not an environmental topic. However, the EIA will be mindful of any utility works (upgrades, diversions, abandonments, etc.) required as part of the proposed development as well as the impacts of existing utilities and services on the site and the likely significant environmental effects of such works will be assessed and documented under the relevant topics in the ES as appropriate.

Energy

9.9 It is a Building Regulations requirement that an Energy Statement is produced for all major development projects so on this basis it is not considered to be a significant issue requiring consideration in an ES.

Health

9.10 Relevant health considerations will be included within the socio-economic chapter and it is not considered that a standalone health chapter is necessary. If there are key aspects the Council wish to be included they can be incorporated within the socio-economic chapter.

Arboriculture

9.11 A combination of the size and nature of the development proposed means that Arboriculture is unlikely to be a significant issue requiring a dedicated chapter in the ES. It will, however, be appropriately referenced in other chapters such as those on Landscape and Ecology and will be detailed in other, non-ES, technical documents supporting the application.

10. CUMULATIVE EFFECTS

10.1 The EIA will consider in-combination effects (with other topic areas) and cumulative effects (with other developments), the outcomes of which are to be reported in the ES.

10.2 The in-combination effects i.e. the combined action of different environmental topic specific impacts upon a resource / receptor will be assessed in the ES. This is likely to include a list of agreed resources / receptors and each specialist consultant are to consider whether their topic area would be likely to have an impact on that receptor while stating the individual 'significance of effect'. From that point the in-combination effects can be concluded.

10.3 In assessing cumulative effects, desk studies are to inform relevant zones of influences (ZOI) by topic area.

10.4 Other developments will need to be considered within a reasonable ZOI. This is likely to include other nearby allocations in the emerging Local Plan Review as well as commitments (planning permissions). A desk-based assessment will take place based on the information publically available at the time of assessment.

10.5 This is likely to include the existing allocation in Cam under Policy SA3 for 450 dwellings and 11.4 ha of employment land (Policy SA3). The Scoping process will determine the specific requirements in respect of assessing the in-combination/cumulative effects.

10.6 It is important to note that the Council would have considered cumulative impacts of this site in relation to other strategic allocations in the preparation of the emerging Local Plan Review.

10.7 The opinion of both Stroud District Council as to which specific development proposals should be taken in to account is sought.

11. CONCLUSION

11.1 The Scoping Report identifies the extent of the issues to be considered in the EIA and reported in the ES a development of up to 1200 dwellings; new primary school; new access points and vehicular, cycle and pedestrian links, strategic landscaping and green infrastructure including areas of informal and public open space and other associated site infrastructure and community uses.

11.2 The scoping exercise informing this report has enabled a preliminary view of key predicted impacts and potential significant effects as a result of the proposed development. It also scopes out other matters that can be considered outside of the ES. It is important to note that the EIA is an iterative process, enabling matters not recognised at a preliminary stage to be addressed at a later date.

11.3 Due to the significant scale of the proposed development there is a wide range of impacts that are to be considered, the relevant topics these impacts will fall under have been assessed and reported. It is also relevant to note that the Council would have carried out a strategic environmental assessment of the emerging Local Plan Review which includes the allocation of the site and development in the order of 700 new homes and primary school. The proposed scoping opinion is for a higher figure to allow flexibility.

11.4 For the reasons set out in this Scoping Report it is considered that the only topic areas which are likely to have a significant effect on the environment are:

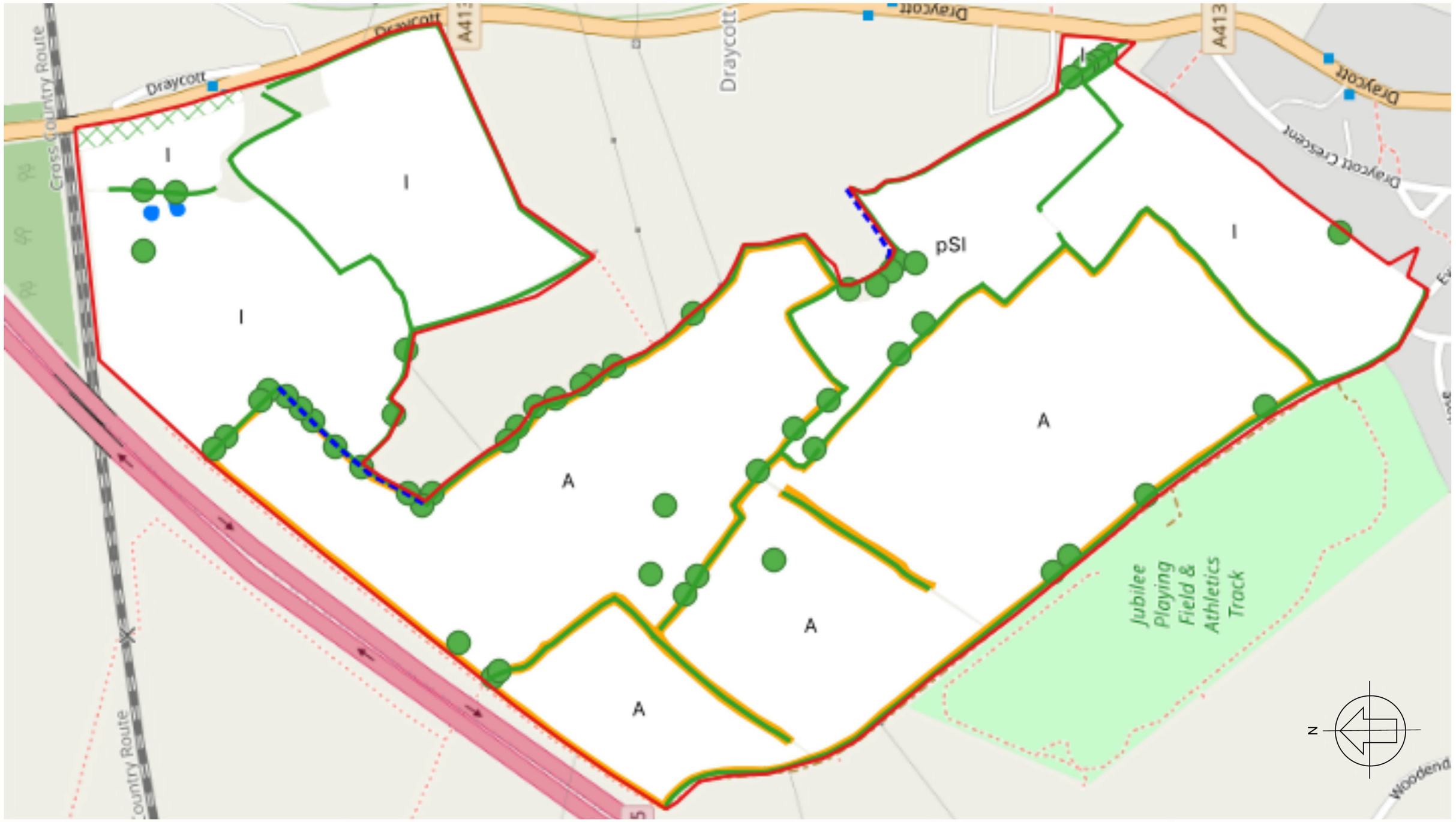
- Socio-Economic;
- Landscape and Visual;
- Ecology and Nature Conservation;
- Cultural Heritage;
- Transport and Access;
- Air Quality;
- Noise and Vibration;
- Hydrology, Flood Risk and Drainage; and
- Ground Conditions

11.5 These will be set out in an ES to accompany an outline planning application.

11.6 In accordance with the EIA Regulations 2017, Stroud District Council are therefore requested to provide a formal scoping opinion, in liaison with statutory consultees. The EIA Regulations require that the Council adopt a formal scoping opinion within five weeks unless agreed otherwise in writing.

APPENDIX ONE – SITE BOUNDARY

APPENDIX TWO – PHASE 1 PLAN



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ON BEHALF OF
Persimmon Homes Severn Valley

PROJECT
Draycott, Cam

SCALE
NTS

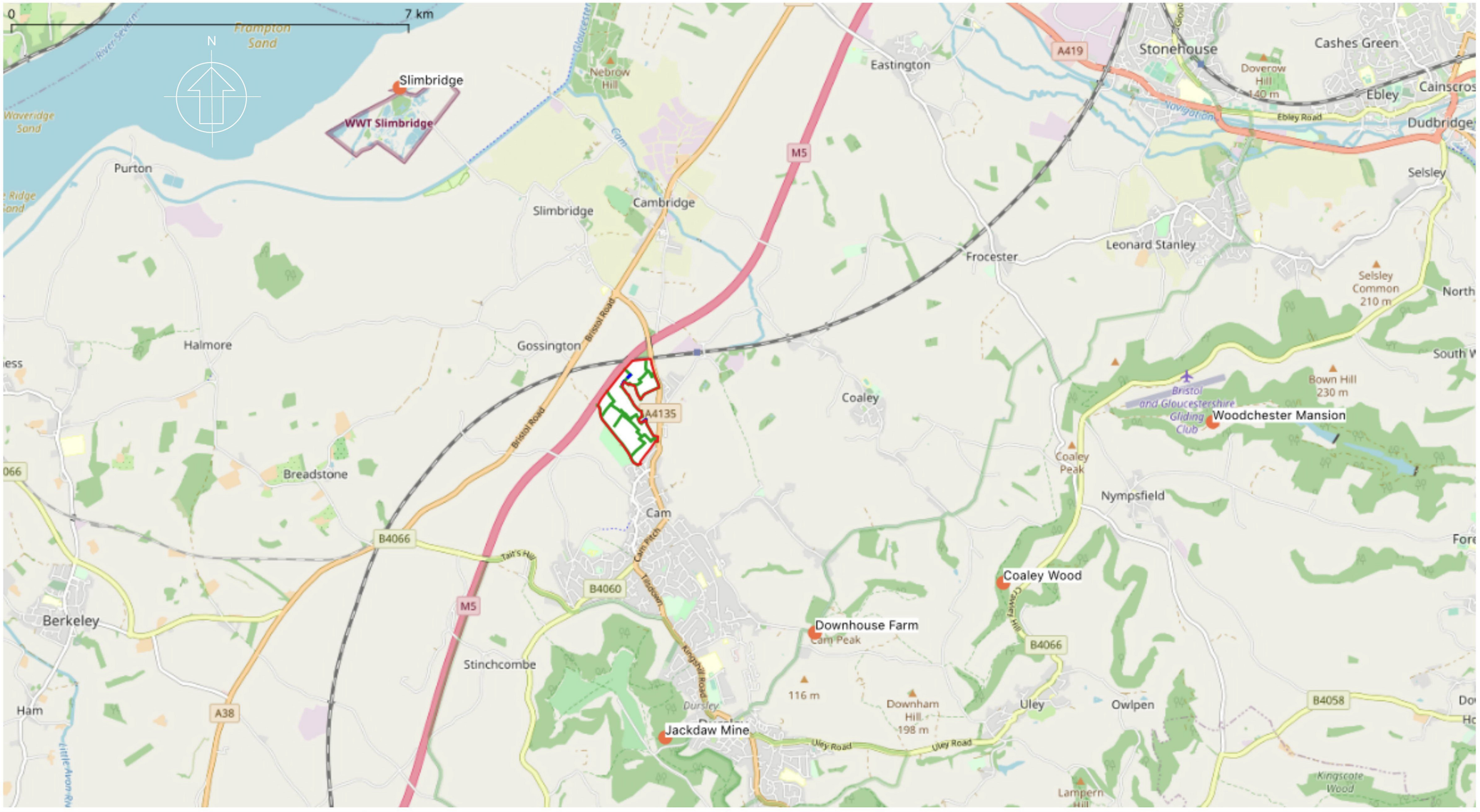
DATE
April 2020

PROJECT NO
eg20924

APPROVED
MD

TITLE
Phase 1 Habitat Map

APPENDIX THREE – HORSESHOE RECORDS



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Significant Greater Horseshoe Roosts (hibernation and maternity roosts)

ON BEHALF OF
Persimmon Homes Severn Valley

PROJECT
Draycott, Cam

SCALE
NTS

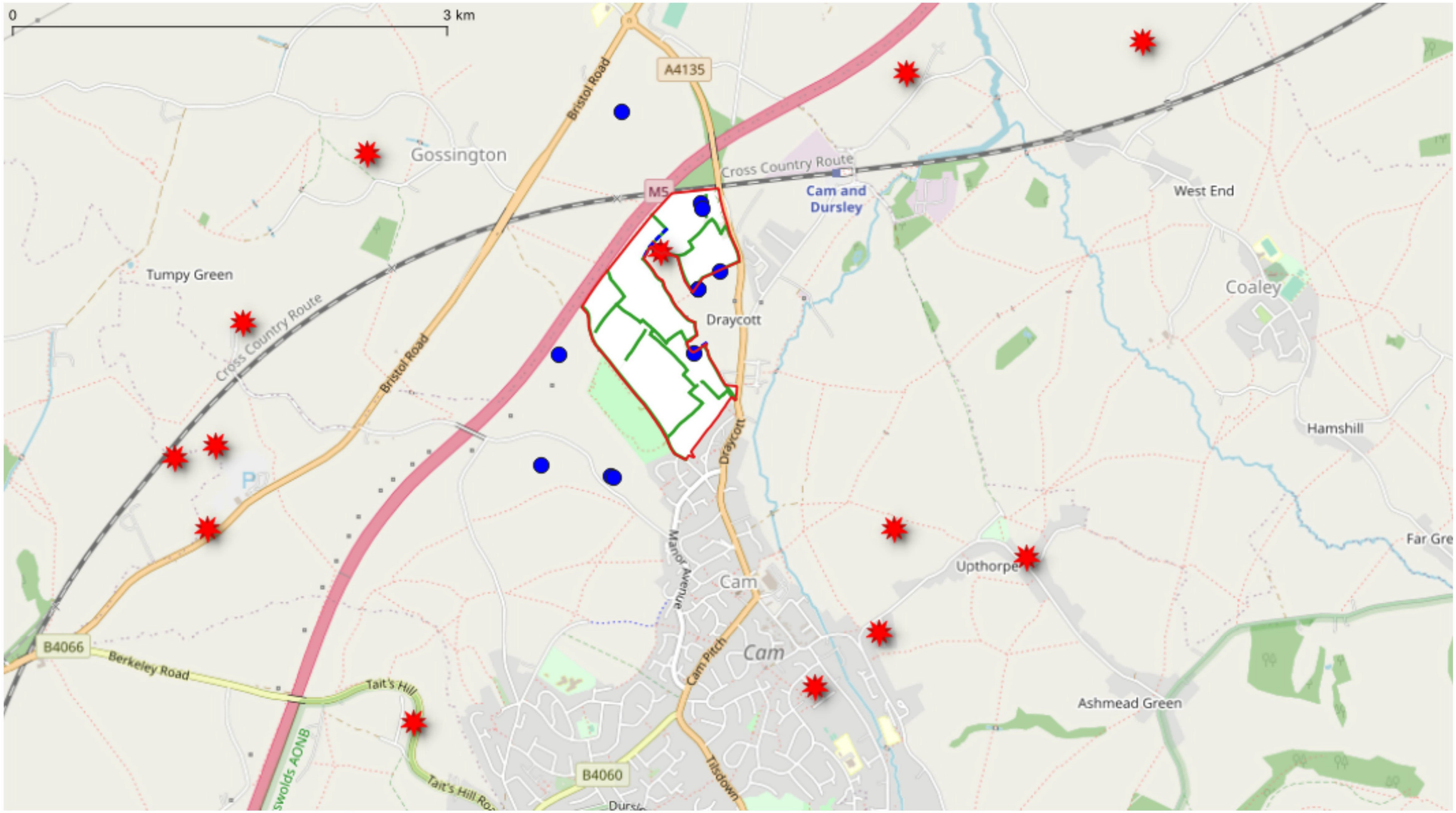
DATE
April 2020

PROJECT NO
eg20924

APPROVED
MD

TITLE
Records of Greater Horseshoe Bats

APPENDIX FOUR – GCN RECORDS



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Record of DNA presence from MAGIC maps

Other Ponds

ON BEHALF OF
Persimmon Homes Severn Valley

PROJECT
Draycott, Cam

SCALE
NTS

DATE
April 2020

PROJECT NO
eg20924

APPROVED
MD

TITLE
Records of Great Crested Newts