Brookfield Garden Village

Hertfordshire County Council

Environmental Impact Assessment

Scoping Report

May 2017

Executive Park, Avalon Way, Anstey, Leicester, LE7 7GR

Tel: 0116 234 8000

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Consultant Information:	WYG Executive Park, Avalon Way Leicestershire LE7 7GR 0116 234 8000 EIA@wyg.com

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Author:	Ross Phillips	Signed:	
Checked by:	Matt McNeice	Signed:	
Verified by:	Adrian Rous	Signed:	

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Contents Page

Appendices

Appendix 1 Assessment Methodologies

1.0 Introduction

1.1.1 This Environmental Impact Assessment (EIA) Scoping Report has been prepared by WYG on behalf of Hertfordshire County Council (HCC), to request a formal scoping opinion from Broxbourne Borough Council (BBC) in support of an application for the Brookfield Garden Village mixed use development.

1.1.2 This Scoping Report sets out the framework within which the Environmental Statement (ES) will be produced, including topic areas and information that will be contained within the ES.

1.1.3 The formal Scoping Request is pursuant to Part 4, Regulation 13 (1) of The Town and Country Planning (EIA) Regulations 2011 (as amended 2015).

1.1.4 This report has assessed the baseline site conditions which have been collated through survey work and desk studies to determine whether the proposed development is likely to result in potentially significant environmental effects.

1.1.5 This report contains sufficient information to allow Broxbourne Borough Council to consult with relevant stakeholders on the proposed scope of the EIA, including the Environment Agency (EA), Natural England (NE) and Historic England so that their comments can be taken into consideration on the provisional scope set out in this report.

1.2 Site Location

1.2.1 The site consulted upon 'Brookfield Garden Village' is located to the north west of Cheshunt in Hertfordshire as shown on Figure 1. The total land take for the scheme is approximately 126.92 ha including access roads.

1.2.2 The Site is dominated by a mixture of agricultural fields, unmanaged grassland and blocks of woodland with scattered areas of scrub, trees and mature hedgerows. The existing uses on site are limited to use of the fields for agricultural purposes and allotments to the south east corner.

1.2.3 To the north the site is bounded by a large block of mature woodland, beyond which is Wormleybury Manor House and its associated grounds and lake. To the east lies the A10 main road with Wormley village located beyond this.

1.2.4 To the south the site is Cheshunt Park Gold Club and the New River. To the West open countryside with several large woodlands.

1.3 Site Context

1.3.1 The proposed allocation at Brookfield is derived from the Council's Local Plan framework document, issued in October 2015, that sets out how the Council proposes to deliver the objectives established in the draft 'vision and objectives' for the local plan. The document recognised that the strategic release of Green Belt land would be required if housing needs were to be met and identified Brookfield as the principal proposed release.

1.3.2 The Broxbourne Borough Council Local plan identified several strategic development sites across the district which includes the Brookfield Garden Village covered by this scoping report. In regards to these sites The Local Plan states;

'*The Council plans to develop the Brookfield area as a comprehensively planned garden suburb that will encompass a retail, civic and leisure centre for the borough of Broxbourne, a business campus and Brookfield Garden Village. Brookfield will be home to around 5000 people.*

The Local plan advocates the re-modelling of Brookfield as a new place for 21st century living, working and leisure in the heart of the Borough. The development is being planned to meet all of the objectives of the Local Plan.

Development at Brookfield will encompass the following principles:

1. *Creation of a sustainable and integrated mixed use garden suburb that will accommodate retail, civic, housing, jobs and social facilities;*
2. *The creation of an identify and sense of place for Brookfield and the borough of Broxbourne;*
3. *To create a strengthened and cohesive retail centre and a new leisure and civic hub for the borough of Broxbourne;*
4. *To achieve a step change in the economy of Broxbourne and increase the attractiveness of Broxbourne as a place to live in, invest in and visit;*
5. *To address traffic congestion and to create sustainable patterns of movement within Brookfield and with the remainder of the Borough;*
6. *To achieve exceptional standards of design and sustainability;*
7. *To retain and enhance the landscape and ecology of the Brookfield area.*

Brookfield will consist of two separate but integrated new neighbourhoods - Brookfield Riverside, which will incorporate the existing Brookfield Centre and Brookfield Retail Park and Brookfield Garden Village.'

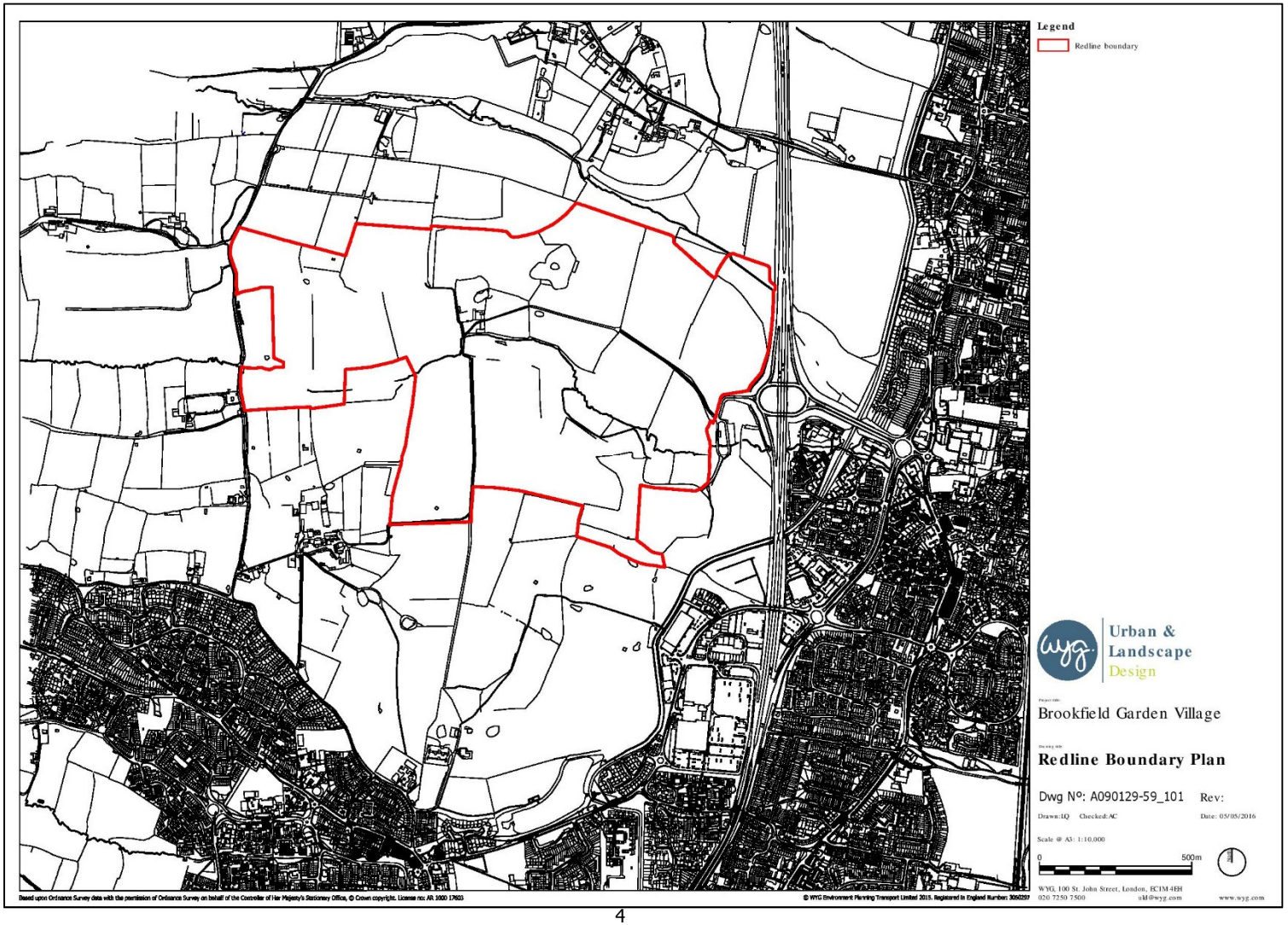
1.4 Overview of the Proposed Development

1.4.1 Brookfield Garden Village presents an opportunity for Broxbourne to comprehensively address its future residential requirements as well as the identified lack of retail and leisure facilities within the Borough.

1.4.2 The proposals are for a residential development comprising the following:

- Up to 2000 new homes;
- New local centre;
- New primary school;
- Employment opportunities; and,
- Provision of sites for relocated uses including a Household Waste Recycling Centre, Council Depot and Travellers site.

Figure 1 – Red Line Plan



1.5 Identified Key Potential Receptors

1.5.1 **Residential Receptors** – There are several properties in relatively close proximity to the proposed development site, the majority of these are separated from the site by significant buffers such as mature woodland, the A10, the New River and the Cheshunt Golf Course. Residential receptors include Wormleybury Manor and other private residences to the north of the site; the main urban conurbations of Wormley and Turnford to the East of the A10, the Halfhide Lane Caravan Park adjacent to the southern most extent of the site and several farms and private homes along Park Lane Paradise to the west of the site.

1.5.2 **Local facilities**: There are several educational facilities within close proximity to the site including Flamstead End School and St Paul's Catholic School in Flamstead End, Wormley Primary School, Longlands Primary School, Hertford Regional College and Churchfield C of E Primary School in Wormley and Turnford to the East.

1.5.3 The are three GP surgeries in close proximity to the site in Wormley, Turnford and Flamstead End and a retail centre including supermarket and petrol station to the immediate south of the site with further retail facilities in Broxbourne to the north and Cheshunt to the south.

1.5.4 A footpath (Public Right of Way (PROW) in close to the southern boundary of the site and follows the course of the New River.

1.5.5 **Heritage Features / Conservation areas**: There are two Schedule Monuments within the site which include Hell's Wood moated site and enclosure and Perrior's Manor moated site and fishpond. To the north of the site there are several listed buildings and Wormleybury registered park and garden.

1.5.6 **Ecology/Biodiversity**: Through the centre of the site there is Spring Wood, a large block of ancient and semi natural woodland and to the south of the site lies Cheshunt Park Local Nature Reserve. Approximately 1km to the east lies the Lee Valley Special Protection Area (SPA) and RAMSAR site and the Turnford and Cheshunt Pits Site of Special Scientific Interest (SSSI). This area comprises a series of wetlands and reservoirs which support a range of wintering wildfowl.

1.5.7 **Surface, Groundwater and Water Resources**: There are several recognised water courses both in and adjacent to the site. The New River lies close to the southern boundary of the site, the Turnford Brook crosses the site running broadly in a north west to south east direction. The Wormley Brook lies adjacent to the north of the site and there are several large ponds on the northern portion of the site.

1.5.8 The majority of the site is located wholly within Flood Zone 1 and therefore not at risk of flooding; this is within the exception of areas immediately adjacent to the Turnford Brook and Wormley Brook where smaller areas lie within both Flood Zones 2 and 3 which are at medium and higher risk of flooding.

1.5.9 **Ground Conditions**: There are two pits on the site which comprise Cheshunt Park Farm Quarry and were historically used as landfill sites and received waste in the 1990's; the waste was considered inert and comprised glass, concrete, bricks, tiles, soil and stone.

1.6 The Environmental Impact Assessment Consultant – WYG

1.6.1 WYG is a Corporate Associate Assessor Member of the Institute of Environmental Management and Assessment (IEMA), and has considerable experience of undertaking both statutory EIA and non-statutory EIA (where the planning authority does not consider that a formal EIA is required under the regulations).

1.6.2 IEMA is the UK's leading body for environmental professionals and is an expert body in the EIA field. IEMA has developed the prestigious EIA Quality Mark to identify organisations that are capable of producing high quality EIA on a consistent basis. WYG is an approved Associate Assessor member under the EIA Quality Mark which means that the quality of our EIA service is approved and regularly reviewed by IEMA. As a result we are allowed to use the EIA Quality mark logo on our EIA reports (as shown on the front cover). For further information on the EIA Quality Mark please visit: http://www.iema.net/qmark.

2.0 Environmental Impact Assessment Approach

2.1 EIA Screening

2.1.1 The Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (as amended 2015) (hereafter termed the 'EIA Regulations'), require that, before consent is granted for certain types of development an EIA must be undertaken. The EIA Regulations set out the types of development which must always be subject to an EIA (Schedule 1 development) and other developments, which will only require assessment if they give rise to significant environmental effects (Schedule 2 developments).Guidance and thresholds are available to help to decide whether EIA is required for a Schedule 2 development.

2.1.2 The development, as described in Section 1, does not fall within any of the descriptions contained within Schedule 1 of the EIA Regulations for which EIA is mandatory. However, the development does fall under the description in Schedule 2, 10 (b) Urban Development Projects. In April 2015 thresholds for urban development projects were raised such that a project proposal needs to be screened if:

- The development includes more than 1 hectare of development which is not dwelling house development; or,
- The development includes more than 150 dwelling houses; or,
- The area of the development exceeds 5 hectares.

2.1.3 In this case, the development has an area of approximately 126.92 hectares and therefore exceeds indicative thresholds set out in the Regulations and is therefore deemed to be Schedule 2 development. Given the size of the site and the key receptors which have the potential to be affected by the proposed development, we consider that the proposals constitute EIA development and the remainder of this document is dedicated to setting out our proposed scope for the ES.

2.2 EIA Scoping

2.2.1 Part 4, Regulation 13 (1) of the EIA Regulations (HMSO, 2011[1]) provides for the Applicant to ask the Local Planning Authority (LPA), in this case BBC, to state in writing the information that should be provided within the ES, a process known as scoping.

[1] Her Majesty's Stationery Office (HMSO), 2011. The Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (as amended 2015) (SI 1824).

2.2.2 The Applicant is required under Part 4, Regulation 13 (2) to provide:

- A plan sufficient to identify the land (as shown in Site Plan Figure 1);
- A brief description of the nature and purpose of the development and of its possible effects on the environment, and;
- Such other information or representations as the person making the request may wish to provide or make.

2.2.3 It is the aim of this EIA Scoping Report to provide sufficient information for BBC to consider and consult on the proposals and to provide a formal scoping opinion.

2.3 Scope of Work

Geographic Scope

2.3.1 The EIA covers the physical extent of the site as shown in the Site Plan Figure 1. It is defined by the area of land to be used, the nature of the current environmental conditions and the manner in which impacts are likely to be generated. It is important to note however that the influence of many predicted impacts can extend beyond the immediate site boundary, for example, the effects on some species that are primarily located off-site but which may use the site for foraging. Where identified and relevant, these impacts have also been assessed as part of the EIA.

Temporal Scope

2.3.2 As this development is proposed to be operational in excess of 100 years and thereafter is likely to comprise developed land in perpetuity this assessment will not address decommissioning.

2.3.3 Any significant changes expected in future baselines due to environmental trends will also be described qualitatively, or in certain cases calculated as quantitative future baseline to allow meaningful future year assessment. These future year baselines take account of cumulative developments not yet built but in the planning system so cumulative effects are taken into consideration as required by the EIA Regulations.

Technical Scope

2.3.4 In order to ascertain the likely scope of the EIA, the process has involved the following steps:

- Identification of the site boundary;
- Identification of the key characteristics of the development site and the establishment of the environmental baseline through a series of desk and field studies;

- Identification of gaps in the baseline and the further survey work required to address these;
- Initial consideration of the potential sources and nature of environmental impacts through assessment against the environmental baseline; and,
- Definition of impact assessment methodologies to be utilised.

2.4 Technical Assumptions

Construction and Operational Legislative Requirements

2.4.1 The ES will assume that all legislative requirements and statutory design guidelines will be met. Therefore, any standard guidance which is provided to ensure minimum legal compliance is not considered to constitute 'additional mitigation' in this EIA and will not be taken into account as such.

Construction Environmental Management Plan (CEMP)

2.4.2 The potential environmental effects of the construction phase will be controlled through a Construction Environmental Management Plan (CEMP). The CEMP would be prepared prior to commencement of construction and would contain all the design and additional mitigation as identified and reported within the ES and any subsequently agreed requirements, expected to be enforced by planning conditions. The details of these documents would be agreed with BBC prior to construction commencing.

2.5 Alternatives

2.5.1 Alternatives will be covered in chapter 4 of the ES.

Alternative Sites

2.5.2 In line with the requirements of the EIA Regulations, alternatives will need to be considered as part of the EIA and will be covered in detail within Chapter 4 of the subsequent Environmental Statement.

2.5.3 In preparing the Local Plan Broxbourne Borough Council considered a large number of alternative options for development which are presented in the Emerging Local Plan: Borough-Wide Options and Scenarios.

2.5.4 The site was identified within the draft local plan as part of a wider 180 hectare 'Brookfield' area which included the Brookfield Riverside and the Brookfield Garden Suburb sites.

2.5.5 Discussion on why sites have been included or excluded is contained in the Sustainability Appraisal (SA) of Broxbourne Emerging Local Plan. All of the sites included in the Proposed Submission Local Plan were tested against the sustainability objective and a summary showing the reasons for selecting each preferred site was included in Appendix B to the SA report.

2.5.6 The sites have been included in the draft submission of the BBC Local plan 2016-2031 which was subject to public consultation between 18th July 2016 and 16th September 2016. Now consultation has closed the Council is considering the overall responses before submitting to government for examination.

Alternative Development Scenarios

2.5.7 Alternatives will be considered at all stages of the development. This might include considering alternative processes as part of the construction phase and in terms of final design and layout of the overall scheme.

2.5.8 The development has been, and continues to be, subject to a process of design development. This process involves incorporating the outcomes of baseline surveys and data that is collected and the outcomes of consultation both with statutory and non-statutory consultees and with the public to result in the optimal solution for development at the site.

3.0 Cumulative Schemes

3.1.1 The potential cumulative effects of the development in association with other developments both during construction and on completion will be included where relevant as required by Schedule 4, Part 1, Paragraph 4 of the EIA Regulations (HMSO, 2011). WYG has undertaken a planning history check to initially screen for other projects within the planning system or those which are allocated in housing or employment allocations that could give rise to significant cumulative effects in our professional judgement. As part of the scoping opinion we would request that BBC confirm agreement with the inclusion of the sites set out below, and provide additional details of any developments not included which they consider should be included within the cumulative assessment.

Table 3.1 List of Other Developments

Site	Policy No. / application ref	Description/status
Brookfield Riverside	Allocation in Draft Local Plan	A proposed leisure and retail facilities immediately to the southern edge of the site boundary
Former St Marys High School Site	07/14/0076/F	Up to 79 residential dwellings
Former Everest Sports Ground	07/13/0649/RM	Up to 96 residential dwellings
Britannia Nurseries, Bryanstone Road	07/16/1354/RM	Up to 90 dwellings
Cheshunt Sports Village	07/16/1369/F	New Stadium, up to 186 dwellings, new commercial and leisure facilities.
High Leigh Garden Village	07/13/0899/O	Up to 523 residential dwellings

4.0 In combination effects

4.1.1 A review of the residual impacts within the ES will be undertaken, along with an exercise which tabulates the impacts against receptors to identify the potential for impact interactions. Only residual impacts classified as being of minor, moderate or major significance will be considered in relation to the potential for the in combination (or inter-relationship) effects of individual impacts. Residual impacts of negligible significance will be excluded as by virtue of their definition, they are considered to be imperceptible impacts.

4.1.2 Where there is more than one impact on a particular receptor, the potential for impact interactions will be assessed.

5.0 Proposed Impact Assessment Criteria

5.1 Impact Assessment Guidance

5.1.1 The assessments presented in the subsequent ES will consider the potential for significant environmental effects to impact the baseline conditions as a direct/indirect result of the Proposed Development. The baseline conditions are defined as the existing state of the environment and how it may develop in the future in the absence of the proposals. This is a requirement of the EIA Regulations which in Schedule 4, Part 1, Paragraph 3 require a description of the aspects of the environment likely to be significantly affected by the development (HMSO, 2011).

5.1.2 Predictions are necessary when forecasting future impacts. The EIA Regulations in Schedule 4, Part 1, Paragraph 4 require a description by the Applicant of the forecasting methods used to assess the effects on the environment (HMSO, 2011). Assessments will be undertaken in accordance with best practice guidelines published by the relevant professional bodies. Industry standard approaches, for example, the Chartered Institute of Ecology and Environmental (CIEEM) Guidelines for Ecological Impact Assessment (EcIA) in the United Kingdom and Ireland – 2nd Edition (CIEEM, 2016), the Landscape Institute / Institute of Environmental Management and the Countryside Agency's Guidelines for Landscape and Visual Impact Assessment (GLVIA) Third Edition (LI/IEMA et al, 2013), CIRIA C552 etc., will be used in undertaking the impact assessments, unless specifically stated otherwise. Detailed descriptions of the methodologies to be used are attached in Appendix 1.

5.1.3 The subsequent ES will provide full details of the assessment criteria and terminology used in the context of that technical discipline.

Proposed Consultation

5.1.4 The Applicant and its consultants propose to undertake extensive discussions with statutory and non-statutory consultees, the local community and the landowner(s). The accumulated findings will have an influence over the evolution of the design and layout, and will be detailed in Chapter 4 of the ES and within the specific technical chapters as appropriate.

5.2 ES Chapters and Headings

5.2.1 It is proposed that that the ES will be based around the following chapter/topic headings.

1.0 Introduction

1.1 Introduction to the Site

5.2 Regional and Local Planning Policy

5.3 References

5.2.2 Specific topic chapters will follow the same format as that proposed below. The topic chapters will be finalised as part of the scoping exercise.

6.1 Introduction

6.2 Methodology and Scope

6.3 Baseline Environment

6.4 Mitigation within the Submitted Design

6.5 Potential Environmental Effects of the Scheme

6.6 Additional Mitigation, Compensation and Enhancement Measures

6.7 Assessment Summary and Residual Environmental Effects

6.8 References

5.2.3 In addition, in accordance with the EIA Regulations the ES will be accompanied by a Non-Technical Summary.

Environmental Topics to be Addressed within the EIA

6.0 Traffic and Transport

6.1 Introduction

6.1.1 This chapter provides the transport and access scoping assessment and provides a summary of the potential effects and how this will be addressed in the EIA and presented in any subsequent ES chapter.

6.2 Baseline Conditions

6.2.1 The existing highway network on or within the boundary of the site consists of:

- A10;
- B198;
- Halfhide Lane – B156; and,
- A1170.

6.3 Further Assessment/ Consultation

6.3.1 Ongoing consultation with the Local Highway Authority and Highways England will be undertaken throughout the design process to address the transport requirements of the scheme and to consider the potential implication on the wider highway network.

6.3.2 WYG will also produce a Transport Assessment and Travel Plan to inform the EIA and support the planning application.

6.4 Mitigation within the Submitted Design

6.4.1 The scheme design is at an early iterative stage and therefore a mitigation strategy has yet to be finalised. However as part of the design process WYG will provide both construction and operational design mitigation into the Proposed Development.

6.5 Receptors to be Considered as part of EIA

6.5.1 The following sections identify the receptors we consider could potentially be significantly impacted, as a result of the Proposed Development and will thus be assessed within the ES. Additional receptors may be included if identified by further technical study.

6.5.2 As part of this scoping opinion we would also request that BBC provide details of any additional receptors they consider should be included.

Construction Phase

6.5.3 Construction traffic is characterised by heavy goods vehicles and construction staff movements.

6.5.4 An assessment of potential construction effects on the following receptors will be undertaken within the ES:

- Local Road Network;
- Identified junctions;
- Vehicle delay; and
- Public Transport.

Operational Phase

6.5.5 Given the scale of the development, the proposals will generate increased traffic movements, both within the site and externally.

6.5.6 An assessment of potential operational effects on the following receptors will be undertaken within the ES:

- Local Road Network;
- Identified junctions;
- Vehicle delay;
- Public Transport;
- Walking, cycling, Public Rights of Way; and
- Cumulative Impacts and Effects.

6.6 Scoping Assessment Summary

6.6.1 Whilst the development is only at a very early stage in it's design, it is considered that given the number of residential units proposed and the size of the adjacent employment area, that the development has the potential to have significant effects as a result of the increases in traffic. Therefore it is proposed that a Transport and Access ES chapter will be produced within the ES. This assessment will be undertaken in accordance with the methodology provided in Appendix 1.

7.0 Noise and Vibration

7.1 Introduction

7.1.1 This chapter considers the potentially significant effects of noise and vibration during site preparation, construction and operation of the Proposed Development to determine if an ES chapter assessing the potential significant effects of noise and vibration is required. Particular attention has been paid to potential changes in the acoustic environment at nearby sensitive dwellings due to the introduction of new noise sources.

7.2 Baseline Conditions

7.2.1 The baseline position for the existing noise environment in/around the site will be established by a noise assessment covering both weekday and weekend periods.

7.2.2 Currently the A10 to the east of the site is anticipated to be the greatest sources of noise, with contributions from the B156, Halfhide Lane and A1170 to a lesser extent. Additional contributions from local residential roads and small-scale commercial and industrial units have also been identified.

7.3 Further Assessment/ Consultation

7.3.1 WYG will produce a noise and vibration assessment to determine the baseline noise level. The Environmental Health Officer (EHO) will be consulted as part of the assessment.

7.4 Mitigation within the Submitted Design

7.4.1 The scheme design is at an early iterative stage and therefore a mitigation strategy has yet to be finalised. However as part of the design process WYG will provide both construction and operational design mitigation into the Proposed Development.

7.4.2 The layout of the development will take consideration of noise contours from the modelling to avoid locating residential properties adjacent to significant noise sources, and where relevant noise mitigation in the form of building standards and bunds or buffers will be specified as required.

7.5 Receptors to be Considered as part of EIA

7.5.1 The following sections identify the receptors we consider could potentially be significantly impacted, as a result of the Proposed Development and will thus be assessed within the ES. Additional receptors may be included if identified by further technical study.

7.5.2 As part of the scoping opinion we would request that BBC provide details of any additional receptors they consider should be included.

Construction Phase

7.5.3 An assessment of potential construction effects on the following receptors will be undertaken within the ES. These receptors will include:

- Residential properties adjacent to the eastern side of the site on the opposite side of the A10;
- Residential properties off Halfhide Lane;
- Residential properties off Park Lane Paradise; and,
- Residential properties off Church Lane to the north.

7.5.4 Given the presence of the two landfill sites within the site boundary and the size of the development area which they cover, it is considered likely that piling would be required to ensure stabilisation for any of the building works. Additionally, it is also considered that piling would be required for the bridge required to cross the New River. As such it is considered that there is the potential for significant environmental effects in relation to vibration and therefore vibration will be considered within the assessment.

Operational Phase

7.5.5 An assessment of potential operational effects on the following receptors will be undertaken within the ES. These receptors will include:

- Residential properties adjacent to the eastern side of the site on the opposite side of the A10;
- Residential properties off Halfhide Lane;
- Residential properties off Park Lane Paradise; and,
- Residential properties off Church Lane to the north.
- Increased traffic along the B156, A1170 and A10.

7.6 Scoping Assessment Summary

7.6.1 Given the potential for the development to result in increases in noise and vibration at both construction and operational phases it is proposed that an ES chapter will be produced within the

ES. This assessment will be undertaken in accordance with the methodology provided in Appendix 1.

8.0 Air Quality

8.1 Introduction

8.1.1 The Chapter will assess the potential effects of the development with respect to air quality during the construction and operational phases. Poor air quality can cause damage to the natural and built environments and human health. The Proposed Development has the potential to deteriorate local air quality, predominantly through increased traffic movement.

8.2 Baseline Conditions

Air Quality Management Areas

8.2.1 The closest Air Quality Management Areas (AQMA) to the site are situated on the B176 High Street, Waltham Cross approximately 3.5km to the south; Monarch's Way A121 Waltham Cross approximately 4km to the south.

8.2.2 Due to the distance between the Proposed Development site and the AQMAs, it is considered unlikely that traffic generated from the Proposed Development will influence existing traffic flows within the AQMAs, however, given the proposed number of additional residential units and the potential for increase in traffic this cannot be confirmed at this stage. Further liaison with the traffic consultants will be undertaken to determine if there are likely to be increases in these areas and whether the AQMA's will be scoped in or out of the assessment.

Air Quality Monitoring

8.2.3 The existing air quality monitoring network comprises 28 sites across the district and also maintains two air quality monitoring stations, one located at College Road/A10 Cheshunt approximately 2.2km to the south and the other near the bus depot at Waltham Cross approximately 3.7km to the south. Both sites continuously measure levels of NO_2, PM_{10} and $PM_{2.5}$.

8.2.4 The last air quality assessment report for Broxbourne was produced in April 2015 which stated that;

`Diffusion tube monitoring data has indicated that there were 10 exceedences of the annual mean objective value for nitrogen dioxide in 2010, 2012, 2013 & 2014, and 9 exceedences in 2011.

In 2015, the council will declare the two further Air Quality Management Areas identified in the 2011 Detailed Assessment, and extend an already existing one. The council will work to produce

and consult on, an updated Air Quality Action Plan to incorporate the new AQMAs within 12 months, and will continue to monitor air quality within the district.

The Planning process has identified a new junction (A10 / College Road), and a road (High Road, Wormley) which could exceed the objective for nitrogen dioxide, which will require Detailed Assessment. A further 10 diffusion tubes will be used from 4th April 2015 onwards to further assess this, and other identified locations within the Borough.'

8.3 Further Assessment/ Consultation

8.3.1 WYG will produce an Air Quality Assessment to determine an up to date baseline. The baseline air quality in the vicinity of the proposed development site will be defined from existing monitoring as described above. It is determined that no additional monitoring will be required as part of the assessment. The Environmental Health Officers (EHO) will be consulted in detail prior to and throughout preparation of the assessment.

8.4 Mitigation within the Submitted Design

8.4.1 The scheme design is at an early iterative stage and therefore a mitigation strategy has yet to be finalised. However as part of the design process WYG will provide both construction and operational design mitigation for the Proposed Development.

8.5 Receptors to be Considered as part of EIA

8.5.1 The following sections identify the receptors we consider could potentially be significantly affected, as a result of the Proposed Development and will thus be assessed within the ES. Additional receptors may be included if identified by further technical study.

8.5.2 As part of the scoping opinion we would request that BBC provide details of any additional receptors they consider should be included.

Construction Phase

8.5.3 An assessment of air quality effects associated with exhaust emissions from construction plant on site; and, exhaust emissions from construction phase road traffic will be undertaken. This will include the impact on the following receptors:

- Sensitive receptors including building façades of residential properties, schools and care homes.
- Ecological receptors including the ancient and semi-natural woodland on site and the Cheshunt Park Local Nature Reserve to the south west.

Operational Phase

8.5.4 An assessment of air quality effects associated with road vehicle exhaust emissions associated with vehicles travelling to and from the proposed development will be undertaken. This will include the impact on the following receptors:

- Sensitive receptors including building façades of residential properties, schools and care homes.
- Ecological receptors including the ancient and semi-natural woodland on site and the Cheshunt Park Local Nature Reserve to the south west.
- Effects on AQMA's (if deemed necessary following liaison with transport consultants).

8.6 Scoping Assessment Summary

8.6.1 It is recognised that with the size of the development and the potential increases in traffic there is potential for significant effects to occur. It is therefore proposed that Air Quality is included within the ES.

8.6.2 This assessment will be undertaken in accordance with methodology provided in Appendix 1.

9.0 Landscape and Visual Impact

9.1 Introduction

9.1.1 This chapter provides the landscape and visual impact scoping assessment. The chapter provides a summary of the potential receptors and how these will be addressed in the EIA and presented in the subsequent ES.

9.2 Baseline Conditions

9.2.1 The site is predominantly undeveloped greenfield land within the green belt on the north western urban fringe of the town of Cheshunt. It contains a central woodland belt, mature trees, and woodland blocks around the boundaries, within a parkland setting. Turnford Brook and a large pond lie within the Site. The woodland along Turnford Brook within the site is subject to a tree preservation order (TPO) and is designated as ancient and semi-natural woodland. A number of blocks of woodland around the site boundary are also subject to TPOs. The site contains a number of large mature trees along field and former field boundaries.

9.2.2 The site lies within the national landscape character area of the Northern Thames Basin (NCA) 111 which is an area rich in geodiversity, archaeology and history and diverse landscapes ranging from the wooded Hertfordshire plateaux and river valleys, to the open landscape and predominantly arable area of the Essex heathlands, with areas of urbanisation mixed in throughout. The London Basin Chalk aquifer, which underlies much of the western section of the Northern Thames Basin NCA, is the principal aquifer supplying water to Inner London. The Chalk is confined in the basin by the overlying Tertiary formations of London Clay, which means recharge largely occurs in the extensive Chalk outcrop of the Northern Thames Basin.

9.2.3 The site falls within the local landscape character area of Wormleybury and Cheshunt Park, as defined in the Broxbourne Landscape Character Assessment. This is described as an area with modified remains of ancient oak/hornbeam woodlands in parkland settings with 18th century and 19th century mixed plantations added. A complex mixture of land uses almost masks this area's history, but clear traces of a medieval deer park and later parklands are evident. These are now covered by arable farmland, pasture with parkland and recreational uses.

9.2.4 There are no Public Rights of Way (PRoW) within the Site. A number of PRoW's lie within the study area including a restricted byway to the immediate west of the Site, and routes within both the urban area and surrounding countryside.

9.2.5 To the immediate south of the Site lies an area designated as Open Space in the local plan. This covers Cheshunt Park, a council run park containing a play area, parking and access trails; and Cheshunt Park Golf Centre. To the north east of the Site, approximately 500m from the Site boundary, lies another designated open space at Cozen Grove, which is also a wildlife site. Smaller areas of designated open space are present throughout the study area.

9.2.6 Within the local plan consultation draft, a corridor within the Site, along part of the length of Turnford Brook, is designated as Local Green Space.

9.2.7 The historic and cultural designations within the site and surrounding area are an indication of the landscape value of the area. To the immediate north of the Site lies Wormleybury Registered Park and Garden. This is described on the register as 'a country house surrounded by a landscape park, developed in the 1770s from an earlier formal scheme, together with remnants of early C19 gardens famed for their plant collection'. The gardens are not public access, however, Church Lane runs through the designated area, which has residential properties along its length.

9.2.8 The site is relatively well enclosed with visibility from public areas into the site restricted by landform and the mature vegetation within and around the site. Views of the site are generally restricted to within 1km of the site boundary, with longer panoramic views available over Cheshunt and the site, from over 3km to the east. Visual receptors include users of Cheshunt Park, the local PRoW and road network, and residents within the surrounding area.

9.3 Further Assessment/ Consultation

9.3.1 WYG will produce a Landscape and Visual Impact Assessment (LVIA) which will be undertaken in accordance with the Guidelines for Landscape and Visual Impact Assessment (published by the Landscape Institute and Institute of Environmental Management & Assessment, Third Edition dated 2013). Viewpoints will be agreed through consultation with the Landscape Officer for BBC.

9.3.2 A site visit has been carried out for the purpose of the scoping study and a number of locations were visited for to identify viewpoint locations for assessment within the LVIA. The visibility surrounding the site is limited from publicly accessible locations and the following are considered representative of the views available from the surrounding area:

- Viewpoint 1: Cheshunt Park from Candlestick Lane;
- Viewpoint 2: Cheshunt Park from western part of the park;
- Viewpoint 3: Appleby Street Open Space to the west of the site (views from the adjacent residential area are restricted by vegetation);

- Viewpoint 4: Holy Cross Hill road and footpath junction (PRoW Cheshunt 030)to the north west of the site;
- Viewpoint 5: From the restricted byway (PRoW Hoddesdon 067) to the west of White Stubbs Farm, approximately 1km to the north of the site;
- Viewpoint 6: Church Lane (near Wormley Sports Club) to the north of the site; and
- Viewpoint 7: Footpath approximately 3km to the east of the site off Coleman's Lane (PRoW Nazeing 10).

9.3.3 Other views towards the site are severely restricted or inaccessible to the general public.

9.4 Mitigation within the Submitted Design

9.4.1 The scheme design is at an early iterative stage and therefore a mitigation strategy has yet to be finalised. However as part of the design process WYG will provide both construction and operational design mitigation into the Proposed Development.

9.4.2 The mitigation measures necessary to reduce the impacts of development will be defined by the assessment process. However 'Primary' or 'Built- in' mitigation may include:

- The general arrangement of Landscaping and Open Space areas and new Residential Development parcels across the site.
- The set back/relationship of development with neighbouring properties and existing landscape features (such as mature woodland).
- Consideration of key views/visual structure within the development.
- The retention of mature trees, hedges and other landscape features within the Landscaping and Open Space areas.
- New Woodland and Tree Planting within Landscaping and Open Space.
- Other measures such as construction, operational management practices and phasing of development will also be considered as a means to mitigate impacts.

9.4.3 Secondary or 'not built in' measures will be considered if through the iterative design process significant adverse landscape and visual impacts still arise.

9.5 Receptors to be Considered as part of EIA

9.5.1 The following sections identify the receptors we consider could potentially be significantly affected as a result of the Proposed Development and will therefore be assessed within the LVIA. Additional receptors may be included if identified by further technical study.

9.5.2 As part of the scoping opinion we request that BBC provide details of any additional receptors they consider should be included.

Construction Phase

9.5.3 An assessment of potential construction effects on the following receptors will be undertaken within the ES.

9.5.4 Landscape Receptors:

- National, County and District Landscape Character Areas;
- Landscape policy;
- Landscape Features within the application Site boundary including Turnford Brook; and,
- Hedgerows, trees and woodland.

9.5.5 Visual Receptors:

- Local residents;
- Individual and /or defined groups including users of Public Rights of Way residents (including settlements);
- Motorists/cyclists;
- Workers; and
- Visitors engaged in recreational/cultural pursuits.

Operational Phase

9.5.6 An assessment of potential operational effects on the receptors listed above will be undertaken within the LVIA.

9.6 Scoping Assessment Summary

9.6.1 It is considered that there is potential for significant effects on the landscape of the site and the area surrounding the Proposed Development and it is considered necessary for an assessment of

the impacts and effects on the landscape and visual receptors to be conducted as part of this ES. This assessment will be undertaken in accordance with the methodology provided in Appendix 1.

10.0 Archaeology and Cultural Heritage

10.1 Introduction

10.1.1 The assessment of archaeology and cultural heritage within this context includes all buried and above ground archaeological remains, built heritage, historic landscapes and any other features that contribute to the archaeological and historic interest of the area. Cultural heritage includes both designated and non-designated heritage assets.

10.1.2 This scoping assessment considers the potential consequences relating to the construction and operation of the Proposed Development.

10.2 Baseline Conditions

10.2.1 Within the site boundary there are two Scheduled Monuments, which are Perrior's Manor moated site and fishpond (NHLE: 1010747) and Hell Wood moated site and enclosure (NHLE: 1010746) which are within the block of mature woodland in the centre of the site. Both of these moated sites include earthwork and buried remains, and would have probably served as prestigious residences during the 13th or 14th centuries. There are no further Scheduled Monuments within a 1.5km buffer if the application site boundary.

10.2.2 There are approximately 51 listed buildings within a 1.5 km radius of the site, including one grade I building and four grade II* buildings; of primary interest is a group of eight listed buildings situated within 400m of the northern boundary of the application site at Wormleybury Manor, which are located in and around the extent of the grade II registered park and garden (NHLE: 1000252) associated with the Manor, which includes the remnants of a landscaped park and well planted gardens.

10.2.3 The central designated asset of the group of listed buildings at Wormleybury Manor is the grade I listed 18th century Wormleybury House (NHLE: 1100541), which is accompanied by separately listed garden features (Wormleybury Garden screen, gate, gate piers and adjoining walls grade II NHLE: 1296201; Wormleybury Garden Vases near portico grade II NHLE: 1100542; a Garden Wall at Garden Cottage grade II NHLE: 1100543; and Wormleybury Monument on south side of lake grade II* NHLE: 1296166). The Parish Church of St Lawrence (grade II* LB 1173566) as well as the associated Wormley Rectory and Old Rectory Wall (grade II NHLE: 1100544 and NHLE: 1348383) are located a little way to the west of the manor, and are enveloped by the registered park and garden.

10.2.4 The Wormley Conservation Area is located approximately 500m to the east of the site and a further two conservation areas to the north east known as the Wentworth Cottages and New River Conservation Areas, which are approximately 1km and 1.2km away respectively.

10.2.5 The Hertfordshire Historic Environment Record indicates a number of areas of archaeological interest in and within close proximity to the site, as well as four archaeology alert areas. The alert areas include:

- Alert Area 1 - a large polygon within the western portion of the site, which includes Evidence of Roman buildings at Cheshunt Park Farm and numerous Roman finds. The alert area encompasses evidence for Romano-British settlement (MHT2293 and MHT1353) within the west portion of the site, and Roman Brick and Tile artefact scatter potentially including a rubble layer (MHT1354), as well as the course of Ermine Street Roman Road (MHT9271) which crosses the application site on an N-S axis;
- Alert Area 2 – centred on the Moated manorial site of Perrior's Manor and Fishpond (Scheduled Monument 1010747 and MHT1123), and incorporates the site of Factory Farm (MHT30818), which was reputedly built as a rope factory in the late 18th century;
- Alert Area 16 – centred on two potential ring ditches within the north of the site, which may present the ploughed remains of round barrows (MHT7991 and MHT7992); and
- Alert Area 13 – centred on the moated enclosure at Hellwood (Scheduled Monument 1010746 and MHT2227), as well as encompassing possible prehistoric features to the south of Hell Wood (MHT10463).

10.2.6 Much of the application site is also characterised by Cheshunt Park, Medieval Deer Park (MHT9984), which is recorded from 1226 AD, while the southern boundary of the site is crossed at a number of points by a World War II Anti-Tank Ditch, forming part of the Outer London Stop Line Eastern Section which ran from Newgate Street to Wormley (MHT10232). Associated defences punctuate the anti-tank ditch in close proximity to the site boundary, including Anti-Tank Obstacles (MHT2281) and Pillboxes (MHT2283 and MHT2282).

10.2.7 Discoveries made around the site also include a significant Mesolithic flint working site to the south, and further Roman material to the north. The site is considered to have a high potential for previously unrecorded archaeological remains to be present, including Romano-British remains along the course of the Ermine Street Roman Road and medieval remains associated with the moated sites. However, the Historic Landscape Character assessment does indicate number of mineral extraction areas within the site, including a large area of now disused mineral extraction

to the south of Hell Wood: the archaeological potential of these parts of the site is considered to be low due to previous truncation.

10.2.8 There are approximately six locally listed buildings located within 1.5km of the site. Two are located to approximately 1km from the south west of the site; three are located approximately 750m to the east of the site in the Wormley Conservation Area; and the final is the located approximately 1km to the north east of the site within the Wentworth Cottages Conservation Area. Other non-designated built heritage assets have been identified within 1.5km of the site from the Hertfordshire Historic Environment Record. These include aqueducts, bridges, houses and farms. However, the majority are pillboxes associated with the World War II anti-tank trap (MHT10232) located to the immediate south of the site and potentially partially within the site – see paragraph 10.2.6 above. Three of these non-designated built heritage assets are located within the application site - Factory Farm (MHT3018) and part of the World War II anti-tank trap (MHT10232) with the associated anti-tank obstacles (MHT2281) and pillbox (MHT2283). All of these non-designated built heritage assets may have settings and hence heritage significance affected by the Proposed Development.

10.3 Further Assessment/ Consultation

10.3.1 WYG will produce separate baseline cultural heritage assessment that will include consideration of buried archaeological remains as a standalone Desk-Based Assessment and the setting of designated heritage assets as a standalone Heritage Statement; these will include consultation with key statutory consultees to identify if further survey work is required to supplement the assessment.

10.3.2 This assessment will be undertaken in accordance with methodology provided in Appendix 1, in accordance with the professional standards and guidance as set out within the Chartered Institute for Archaeologists (CIfAs) Standard and Guidance for historic environment desk-based assessments as well as the National Planning Policy Framework (2012) and the associated Planning Practice Guidance 'Conserving and enhancing the historic environment' (2014). It will also take account of Historic England's Good Practice Advice Note 2 'Managing Significance in Decision-Taking in the Historic Environment' and Note 3 'The Setting of Heritage Assets' (2015).

10.4 Mitigation within the Submitted Design

10.4.1 The scheme design is at an early iterative stage and therefore a mitigation strategy has yet to be finalised however it is assumed the schedule monuments will be preserved in situ. As part of the design process WYG will provide both construction and operational design mitigation into the

Proposed Development. This mitigation will take into account the findings of the archaeological investigation.

10.5 Receptors to be Considered as part of EIA

10.5.1 The following sections identify the receptors we consider could potentially be significantly impacted, as a result of the Proposed Development and will thus be assessed within the Desk-Based Assessment, Heritage Statement and ES. Additional receptors may be included if identified by further technical study.

10.5.2 As part of the scoping opinion we request that BBC provide details of any receptors that could be scoped out of the archaeological Desk-Based Assessment and Heritage Statement as well as any additional receptors that should be included.

10.5.3 In terms of the Heritage Statement, initial screening has been undertaken for designated and non-designated heritage assets (excluding non-designated heritage of archaeological interest) – see Tables 10.1-10.4 at the end of this section. This compared the location of the heritage assets with the Zone of Theoretical Visibility (ZTV) for the Proposed Development (LA.05.03) in order to understand whether their settings and hence heritage significance were likely to be affected by the Proposed Development. On the basis of this initial screening, it is recommended that 13 designated heritage assets (two scheduled monuments, one registered park and garden, nine listed buildings; and one conservation area) and 15 non-designated heritage assets (two farms and 13 World War II pillboxes, anti-tank obstacles and the tank trap) be potentially taken forward into the Heritage Statement. The reasons for including or excluding heritage assets can be found in Tables 10.1-10.4.

10.5.4 During the preparation of the Heritage Statement, a combination of research, site visit and updated ZTV will be used to ensure that only those heritage assets with settings affected by the Proposed Development are considered in detail within the Heritage Statement. It is anticipated that the main setting impacts will be on the Scheduled moated remains within the site boundary, on Wormleybury Manor registered park and garden and associated designated assets, as well as the non-designated World War II installations.

Construction Phase

10.5.5 An assessment of potential construction effects on the following receptors will be undertaken within the ES.

- Scheduled Ancient Monuments;

- Registered Parks and Gardens;
- Listed Buildings;
- Conservation Areas;
- Previously recorded and potential buried archaeological remains and deposits; and
- Other features e.g. ancient hedgerows, ancient woodland, and the historic landscape.

Operational Phase

10.5.6 An assessment of the potential operational effects on the following receptors will be undertaken within the ES.

- Scheduled Monuments;
- Registered Parks and Gardens;
- Listed Buildings;
- Conservation Areas;
- Non-designated built heritage assets; and
- Other features e.g. ancient hedgerows, ancient woodland, and the historic landscape.

10.6 Scoping Assessment Summary

10.6.1 Given the presence of the scheduled ancient monuments, previously recorded undesignated archaeological remains and the high potential for unrecorded archaeological remains to be present in the wider area, which may include the site, it is considered that the proposed development has the potential for significant effects upon the archaeological resource. Additionally, there are numerous other designated and non-designated heritage assets in close vicinity to the site, as well as the scheduled monuments within the site, with settings and hence heritage significance that could be impacted negatively upon by the development of the site.

10.6.2 It is therefore proposed that an Archaeology and Cultural Heritage chapter will be included within the ES using the methodology in Appendix 1. This will not re-assess the Proposed Development but will re-present the findings of the baseline Archaeological Desk-Based Assessment and the Heritage Statement.

Table 10.1: Scheduled Monuments, Registered Parks and Gardens and Listed Buildings Within Study Area.

NHLE No.	Name	Type	Grade	Scoped out	Reason
1000252	WORMLEYBURY	Registered Park and Garden	II	No	Located to the immediate north of the application site
1010746	Hell Wood moated site and enclosure	Scheduled Monument	N/A	No	Located within the application site
1010747	Perrior's Manor moated site and fishpond	Scheduled Monument	N/A	No	Located within the application site
1100507	HOME FARM GRANARY	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100509	NUMBERS 175 AND 177 INCLUDING WALL ON SOUTH SIDE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100513	THE RED HOUSE AT THE BROXBOURNE SCHOOL	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100514	BRIDGE HOUSE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100515	OUTBUILDING AT NUMBER 172 (YEW TREE COTTAGE)	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100516	GARAGE AT NUMBER 172 (YEW TREE COTTAGE)	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100517	37, HIGH ROAD WORMLEY	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100518	81, HIGH ROAD WORMLEY	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100519	THE QUEENS HEAD PUBLIC HOUSE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100520	THE OLD MANOR HOUSE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100521	WORMLEY HOUSE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100537	OLD SCHOOL HALL (NORTH) OLD SCHOOL COTTAGE (SOUTH) OLD SCHOOL HOUSE (WEST)	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100540	2, 4, 6 AND 8, CHURCH LANE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100541	WORMLEYBURY	Listed Building	I	No	Located to the immediate north of the application site
1100542	WORMLEYBURY GARDEN VASES NEAR PORTICO	Listed Building	II	No	Located to the immediate north of the application site
1100543	GARDEN WALL AT GARDEN COTTAGE	Listed Building	II	No	Located to the immediate north of the application site
1100544	WORMLEY RECTORY	Listed Building	II	No	ZTV indicates proposed development may be visible from Listed Building's immediate setting
1100558	THE WOODMAN STORES	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting

NHLE No.	Name	Type	Grade	Scoped out	Reason
1100560	BULL'S HEAD INN	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100561	HILLVIEW	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100562	THE ORCHARDS	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100567	COAL DUTY OBELISK AT FOOT OF HILL OPPOSITE STILE TO PUBLIC FOOTPATH	Listed Building	II	Yes	ZTV indicates proposed development may be visible from Listed Building's immediate setting. However, the Listed Building is not visible on Google Earth. If still present, road-side setting unlikely to be affected by proposed development due to distance and screening by vegetation.
1100568	THE LODGE	Listed Building	II*	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100577	HATTON HOUSE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100608	FRANCIS FARMHOUSE	Listed Building	II	No	ZTV indicates proposed development visible from Listed Building's immediate setting
1100610	THE WHITE HOUSE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1100611	BEAUMONT MANOR	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1101698	THE OLD COTTAGE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1173183	BEECHOLM	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1173187	SUNNYSIDE COTTAGE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1173566	PARISH CHURCH OF ST LAWRENCE	Listed Building	II*	No	ZTV indicates proposed development may be visible from Listed Building's immediate setting
1173573	LANTERN COTTAGE	Listed Building	II	Yes	ZTV indicates proposed development may be visible from Listed Building's immediate setting. However, Google Earth indicates proposed development is unlikely to be visible from Listed Building's garden setting due to distance, topography and screening by vegetation and some existing buildings.
1173688	SMALL WELLS	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1173701	POST OFFICE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1174007	BP BROOKS, BUTCHERS SHOP AND OUTHOUSE TO REAR	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1174019	BARN ON WEST SIDE OF COURTYARD AT LISAND FARM	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1177242	31 AND 33, WORMLEY WEST END	Listed Building	II	Yes	ZTV indicates proposed development may be visible from Listed Building's immediate setting. However, Google Earth indicates proposed development is unlikely to be visible from Listed Building's garden setting due to distance, topography and screening by vegetation and some existing buildings.
1177252	MIMMS COTTAGE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1249478	COAL DUTY MARKER AT TL 3684 0514 SW	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1296087	79, HIGH ROAD WORMLEY	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting

NHLE No.	Name	Type	Grade	Scoped out	Reason
1296094	OUTBUILDINGS ON SOUTH SIDE OF NUMBER 72 (THE OLD MANOR HOUSE)	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1296166	WORMLEYBURY MONUMENT ON SOUTH SIDE OF LAKE	Listed Building	II*	No	Located to the immediate north of the application site
1296201	WORMLEYBURY GARDEN SCREEN, GATE, GATE PIERS AND ADJOINING WALLS	Listed Building	II	No	Located to the immediate north of the application site
1296351	COAL DUTY OBELISK IN FRONT YARD OF NUMBER 137	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1347824	THE WOODMAN PUBLIC HOUSE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1348362	HOLLY LODGE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1348382	THE BAAS	Listed Building	II*	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1348383	THE OLD RECTORY GARDEN WALL	Listed Building	II	Yes	ZTV indicates proposed development may be visible from Listed Building's immediate setting. However, Google Earth indicates that proposed development would not affect this Listed Building's primary setting relationship to and group value with the Old (Wormley) Rectory.
1348393	CAMPS FARMHOUSE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1348395	CHESHUNT PARK GOLF CLUB HOUSE	Listed Building	II	No	ZTV indicates proposed development may be visible from Listed Building's immediate setting
1348408	2, COZENS LANE EAST (See details for further address information)	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting
1348411	YEW TREE COTTAGE	Listed Building	II	Yes	ZTV indicates proposed development not visible from Listed Building's immediate setting

Summary: A total of 12 designated heritage assets (one Registered Park and Garden; two Scheduled Monuments; nine Listed Buildings) within the Study Area are recommended to be scoped into the Heritage Statement due to the potential visibility of the proposed development from their immediate settings. These are shaded grey.

Table 10.2: Conservation Areas within Study Area.

Conservation Area	Scoped out	Reason
Wormley Conservation Area	No	ZTV indicates south-western setting potentially affected by the proposed development but no visibility from within the Conservation Area
Wentworth Cottages Conservation Area	Yes	ZTV indicates proposed development not visible from within or from the setting of the Conservation Area

Summary: One Conservation Area (designated heritage asset) is recommended to be scoped into the Heritage Statement due to the potential visibility of the proposed development from part of its setting. It is shaded grey.

Table 10.3: Locally Listed Buildings within Study Area.

Locally Listed Building	Scoped out	Reason
Halcroft House & Lodge Dig Dag	Yes	ZTV indicates proposed development not visible from the Locally Listed Building's immediate setting
Burton Grange Rags Lane	Yes	ZTV indicates proposed development not visible from the Locally Listed Building's immediate setting
Bushcroft Slipe Lane Turnford	Yes	ZTV indicates proposed development not visible from the Locally Listed Building's immediate setting
Oaklands 80 High Road Wormley	Yes	ZTV indicates proposed development not visible from the Locally Listed Building's immediate setting
Fairfields 70 High Road Wormley	Yes	ZTV indicates proposed development not visible from the Locally Listed Building's immediate setting
Wentworth Cottages	Yes	ZTV indicates proposed development not visible from the Locally Listed Building's immediate setting

Summary: No Locally Listed Buildings are recommended to be scoped into the Heritage Statement.

Table 10.4: Other Non-Designated Built Heritage Assets (NDBHAs) within Study Area.

HER ID	Name	Scoped out	Reason
1578	PILLBOX, BREAD AND CHEESE LANE, CHESHUNT	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
1897	PILLBOX AND ANTI-TANK OBSTACLE, BREAD AND CHEESE LANE, CHESHUNT	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
2209	PILLBOX AND ASSOCIATED ANTI-TANK OBSTACLES, GAMMON FARM, CHESHUNT	No	ZTV indicates proposed development may be visible from NDBHA's immediate setting
2236	PILLBOX, APPLEBY STREET FARM, CHESHUNT	No	ZTV indicates proposed development may be visible from NDBHA's immediate setting
2247	PILLBOX, APPLEBY STREET FARM, CHESHUNT	No	ZTV indicates proposed development may be visible from NDBHA's immediate setting
2250	PILLBOX, PARK LANE, CHESHUNT	No	ZTV indicates proposed development may be visible from NDBHA's immediate setting
2254	ANTI-TANK OBSTACLES, FRANCIS FARM, CHESHUNT	No	ZTV indicates proposed development may be visible from NDBHA's immediate setting
2269	PILLBOX AND ANTI-TANK OBSTACLES, PARK LANE PARADISE, CHESHUNT	No	ZTV indicates proposed development may be visible from NDBHA's immediate setting
2272	PILLBOX, CHESHUNT PARK FARM, CHESHUNT	No	ZTV indicates proposed development may be visible from NDBHA's immediate setting
2279	PILLBOX, NW CORNER OF CHESHUNT PARK, CHESHUNT	No	ZTV indicates proposed development may be visible from NDBHA's immediate setting
2281	ANTI-TANK OBSTACLES, CHESHUNT PARK, CHESHUNT	No	ZTV indicates proposed development may be visible from NDBHA's immediate setting
2282	PILLBOX, CHESHUNT PARK, CHESHUNT	No	ZTV indicates proposed development may be visible from NDBHA's immediate setting
2283	PILLBOX, CHESHUNT PARK FARM, CHESHUNT	No	ZTV indicates proposed development may be visible from NDBHA's immediate setting
2532	PILLBOX AND ASSOCIATED ANTI-TANK OBSTACLES, W BANK OF NEW RIVER, WORMLEY	No	ZTV indicates proposed development may be visible from NDBHA's immediate setting
5080	CHESHUNT WASH BRIDGE, CHESHUNT WASH, CHESHUNT	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
5087	ROAD BRIDGE, OVER THE NEW RIVER, BROXBOURNE	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
5273	LETTER BOX, TURNFORD HIGH ROAD, CHESHUNT	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
5309	LETTER BOX, BEAUMONTS MANOR, CHESHUNT	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
5324	LAMP BOX, WORMLEY WEST END	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
5327	PUMPING STATION, TURNFORD WELL, CANADA LANE, TURNFORD	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
5701	ROAD BRIDGE, CHURCH LANE, WORMLEY	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
5702	ROAD BRIDGE, BROOKFIELD LANE, FLAMSTEAD END, CHESHUNT	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
5999	THE NEW RIVER [AQUEDUCT]	Yes	ZTV indicates proposed development may be visible from parts of NDBHA's setting. However, the part urban, part rural setting of this NDBHA would not be affected by this partial visibility.
6673	PILLBOX AND ASSOCIATED ANTI-TANK OBSTACLES, SLIPE LANE RAILWAY CROSSING, TURNFORD	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting

6835	ROAD BRIDGE OVER TURNFORD BROOK, CHESHUNT	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
7058	AQUEDUCT CARRYING THE NEW RIVER OVER THE TURNFORD BROOK, CHESHUNT	Yes	ZTV indicates proposed development may be visible from parts of NDBHA's setting. However, the part urban, part rural setting of this NDBHA would not be affected by this partial visibility.
7254	CHESHUNT RESERVOIR (SOUTH), BROOKFIELD LANE, CHESHUNT	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
10232	WORLD WAR II ANTI-TANK DITCH, OUTER LONDON STOP LINE EASTERN SECTION, FROM NEWGATE STREET TO WORMLEY [TANK TRAP]	No	ZTV indicates proposed development may be visible from parts of NDBHA's setting
10630	CHESHUNT NORTH RESERVOIR, BROOKFIELD LANE, CHESHUNT	Yes	ZTV indicates proposed development may be visible from parts of NDBHA's setting
13002	CROSSING KEEPER'S HOUSE, THE GATE HOUSE, SLIPE LANE, WORMLEY	Yes	ZTV indicates proposed development may be visible from parts of NDBHA's setting
15701	PARK AND GARDEN AT BAAS MANOR, WHITE STUBBS LANE, BROXBOURNE	Yes	ZTV indicates proposed development may be visible from parts of NDBHA's setting
17725	APPLEBY STREET FARM, 147 APPLEBY STREET, CHESHUNT	No	ZTV indicates proposed development may be visible from parts of NDBHA's setting
18600	FAIRLEY HOUSE (FAIRLEY FARM), STOCKWELL LANE, CHESHUNT	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
18629	BURTON LODGE, RAGS LANE, CHESHUNT	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
30646	BEAUMONT MANOR FARM, BEAUMONT ROAD, WORMLEY	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
30647	BREAD & CHEESE BRIDGE, BREAD AND CHEESE LANE, WORMLEY	Yes	ZTV indicates proposed development not visible from NDBHA's immediate setting
30818	FACTORY FARM, CHESHUNT	No	Located within the application site

Summary: 15 Non-designated Built Heritage Assets are recommended to be scoped into the Heritage Statement due to the potential visibility of the proposed development from their immediate settings. These are highlighted in grey. Where HER sites duplicate designated heritage assets, they have been excluded.

11.0 Hydrology and Flooding

11.1 Introduction

11.1.1 This chapter provides the hydrology and drainage scoping assessment and discusses the potential for the development to significantly affect these aspects of the baseline environment.

11.2 Baseline Conditions

Watercourses

11.2.1 There are several recognised water courses both in and adjacent to the site. The New River lies close to the southern portion of the site; the Turnford Brook crosses the site running broadly in a north west to south east direction. The Wormley Brook lies adjacent to the north of the site and there are several large ponds on the northern portion of the site.

Flood Zones and Flood Plain

11.2.2 According to the Environment Agency's Flood Map the majority of the site is located wholly within Flood Zone 1 and therefore not at risk of flooding; this is with the exception of areas immediately adjacent to Turnford Brook and Wormley Brook where smaller areas lie within both Flood Zones 2 and 3 which are at medium and higher risk of flooding.

Other Flood Risks

11.2.3 An initial review of the Environment Agency's Flood Risk from surface water mapping has been undertaken and this has confirmed that some areas of the site are at risk of surface water flooding. These areas are primarily located in three main areas which include along the northern boundary of the site in close proximity to Wormleybury Brook, through the centre of the site in areas adjacent to Turnford Brook and along the southern extent of the site in close proximity to existing drains.

11.2.4 The site is not considered to be at risk of flooding from reservoirs.

Surface Water Drainage

11.2.5 The site currently comprises largely undeveloped greenfield land. It is considered that there are existing surface water sewers within the site, with surface water runoff being drained to the existing drains.

Water Quality

11.2.6 The New River which runs through the south of the site is subject to Water Framework Directive targets and currently has a 'good' status. The Wormleybury Broook and Turnford Brook are part of the catchment and are considered likely to be required to adhere to the same targets and standards. However, this will be assessed in more detail during the detailed assessment phase.

Groundwater

11.2.7 The site lies partially within a groundwater source protection inner zone 1 and partially within outer zone 2.

11.3 Further Assessment/ Consultation

11.3.1 WYG will produce a flood risk assessment and drainage strategy to support the ES and planning application; this will include consultation with the Lead Local Flood Authority. In addition, consultation will take place in relation to water supply and foul drainage issues with Thames Water.

11.3.2 The drainage strategy will be developed to utilise sustainable drainage techniques, in accordance with the guidelines of the SuDS Manual (C753) and the DEFRA Non Statutory Technical Standards for Sustainable Drainage.

11.4 Mitigation within the Submitted Design

11.4.1 The scheme design is at an early iterative stage and therefore a mitigation strategy has yet to be finalised. However, as part of the design process WYG will provide both construction and operational design mitigation into the Proposed Development. This will include management measures at the construction phase that will be delivered through a CEMP to control runoff and pollution related risks through the construction processes taking place on site. At the operational phase the work undertaken as part of the assessment will feed into a comprehensive drainage strategy for the site. This drainage strategy will incorporate SuDS and provisions for the management of foul water drainage.

11.5 Receptors to be Considered as part of EIA

11.5.1 The following sections identify the receptors we consider could potentially be significantly impacted, as a result of the Proposed Development and will thus be assessed within the ES. Additional receptors may be included if identified by further technical study.

11.5.2 As part of this scoping opinion we would also request that BBC please provide any additional receptors they consider should be included.

Construction Phase

11.5.3 An assessment of potential construction effects on the following receptors will be undertaken within the ES.

- Surface water quantity and quality;
- Impact on existing watercourses;
- Drainage (including foul);
- Water usage; and
- Groundwater.

Operational Phase

11.5.4 An assessment of potential operational effects on the following receptors will be undertaken within the ES.

- Surface water quantity and quality;
- Impact on existing watercourses;
- Drainage (including foul);
- Water usage; and
- Groundwater.

11.6 Scoping Assessment Summary

11.6.1 Given the potential effects to water from the proposed development a Hydrology and Flooding ES chapter will be produced. This assessment will be undertaken in accordance with methodology provided in Appendix 1.

12.0 Ecology

12.1 Introduction

12.1.1 This chapter outlines the proposed scope of works which will form the Ecological Impact Assessment (EcIA) in the Environmental Statement (ES) for the proposed development.

12.2 Baseline Conditions

12.2.1 On the basis of a review of the habitats present and the background survey information for the site, a suite of ecological survey work is being undertaken to inform the baseline assessment of the site, including a desktop study, extended Phase I survey and Phase II protected species surveys.

Desktop Study

12.2.2 A desktop study has been undertaken, contacting both the local records centre and reviewing electronic resources (e.g. MAGIC database) to identify known ecological constraints such as statutory or non-statutory designations, or known sites for protected species.

Phase I Habitat Survey

12.2.3 The site has been surveyed based on extended Phase 1 survey methodology (Joint Nature Conservation Committee, 2010[2]), whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. Attention has also been paid to any invasive or noxious plants or weeds listed on Schedule 9 of the Wildlife and Countryside Act 1981.

12.2.4 Although there are no statutory designated sites within the boundary, the site is located approximately 1.5km from the Lee Valley SPA/Ramsar and the Turnford and Cheshunt SSSI; and 2km from the Wormley Hoddesdonpark Wood SAC and Wormley Hoddesdonpark Wood South SSSI. It is within the Impact Risk Zones for these statutory designated sites and, in addition, impacts on these (and other) designated sites will need to be considered with mitigation provided to minimise impacts on the qualifying features of each.

12.2.5 Priority habitats are present within the site boundary including ancient and semi-natural woodland, hedgerows and unimproved neutral grassland. The watercourses including New River, Turnford Brook and Wormleybury Brook are present within and/or within close proxmity to the

[2] Handbook for Phase I habitat survey: A technique for environment audit. JNCC, 2010.

site. As well as their intrinsic value and connectivity with the wider landscape, the habitats within the boundary have potential to support protected and notable species such as badgers, great crested newts, reptiles and bats. In addition, farmland birds including lapwing, redshank and grey partridge have potential to use the site with skylark confirmed by BSG to be nesting.

Phase II Survey Work

12.2.6 Based on the habitats present at the site and the identified potential for protected and notable species, the following Phase II survey work is being undertaken in support of the application:

Survey	Rationale	Methodology	Survey Progress
Bat Activity Survey	There are habitats and features present on site that would offer suitable foraging habitat for bats	Follow Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins 2016). Bat Activity surveys.	7 visits out of 8 have been undertaken on the site with just the May 2017 visits left to undertake.
Bat Roost	There are a number of mature trees present on site which offer suitable rooting potential	Follow Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins 2016). Daytime assessment to determine potential.	An initial survey undertaken in 2016 identified 107 trees with suitable potential. Further surveys to be undertaken once detail plans have been created.
Great Crested Newt Surveys	There are a number of ponds present on site that are suitable for supporting GCN, in addition historic records indicate that GCN are nearby.	Following the methods set out in the Great Crested Newt Mitigation Guidelines (2001); 4-6 survey visits between March and mid-June	EDNA surveys undertaken in 2016 found that GCN DNA in seven waterbodies on site, currently 2017 surveys are being undertaken to assess the population.
Badger	There are areas of suitable habitat for badgers to construct their setts	Following Harris et al. (1989); a walkover survey to identify the location and size (number of entrances) of setts across the sites	A main sett, a secondary sett and two outlier setts have been confirmed within the site
Wintering Bird Surveys	The sites include significant areas suitable for farmland birds, and incidental reports were obtained suggesting the lakes present on site supported a large population of wintering water fowl.	Four visits undertaken between November-February using the standard territory (registration) mapping techniques as detailed in Bibby et al. (2007). Registrations of birds, using standard British Trust for Ornithology (BTO) two letter species codes and activity codes (Gilbert et al., 2002), were placed onto an appropriate field map.	Analysis of the maps is currently being undertaken.
Breeding Bird Surveys	The sites include significant areas suitable for both farmland and ground nesting birds. Last year Barn owls successfully bred on	Four visits undertaken between March-June using the standard territory (registration) mapping techniques as detailed in Bibby et al. (2007). Registrations of birds, using standard British Trust for Ornithology	Surveys are currently underway.

Survey	Rationale	Methodology	Survey Progress
	site.	(BTO) two letter species codes and activity codes (Gilbert et al., 2002), were placed onto an appropriate field map.	
Reptile Surveys	There are areas of suitable habitat for reptiles to bask, forage and hibernate.	The methodology for the presence/absence reptile survey was based on the Herpetofauna Workers' Manual (2003) and Froglife's Reptile Survey Advice Sheet 10 (1999).	Seven visit were undertake, only a single adult grass snake was recorded along the verge of one of the farm tracks.
Dormouse	There is habitat present within the site to support dormice, in addition the proposed development may result in the loss of hedgerows and other linear features	A nest tube survey was undertaken following the methodology as described in The Dormouse Conservation Handbook (Bright et al., 2014).	Surveys are currently underway.
Watervole & Otter	The stream that runs through the site offers suitable habitat to support these species, it is also connected to other waterbodies in the wider area, where historical records have been found for otter, watervole and white clawed crayfish	The otter and water vole survey methodology was based on that outlined within the Water Vole Conservation Handbook 3rd Ed. (Strachan et al, 2011) and the Water Vole Mitigation Handbook (Dean et al, 2016) with the aim of determining whether otters and water voles are present and could be affected by the development proposals.	To date, no evidence of either species was recorded within the site although they have been noted in the wider area. A second visit is scheduled for May 2017
Invertebrates	The mature woodland, hedgerow ponds and streams on site, offer ideal habitat for invertebrates	Night searching by torch light was undertaken along the stream on site.	A white-clawed crayfish survey was undertaken in 2016, it did not find evidence of this species. Invertebrate surveys for other terrestrial or aquatic species have not been undertaken as much of the high value habitat will be retained. The masterplan has focused on creating buffers around retained habitats and on enhancing connectivity along green corridors.

12.3 Further Assessment/ Consultation

12.3.1 It is considered that the above Phase II surveys will enable all significant habitat and faunal issues to be assessed and that no other surveys are required to inform the baseline assessment.

12.3.2 A qualitative and quantitative ecological impact assessment will be undertaken, following the principles set out in the CIEEM publication 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (2016), and will include an assessment of cumulative effects, details of appropriate mitigation measures, and details of any residual effects (should any exist following mitigation).

12.3.3 Consultation with all interested parties, including Natural England and the local authority, would be undertaken to check that all issues are covered within the assessment.

12.4 Mitigation within the Submitted Design

12.4.1 Mitigation measures will be determined following assessment of the likely significant effects and review of the masterplan.

12.4.2 Such mitigation measures are likely to include the implementation of safeguard measures to protect important habitats and protected species during construction works, such as protective fencing and a Construction Environmental Management Plan (CEMP) to reduce effects of dust, noise and drainage during construction works; the sensitive design of lighting; replacement planting and habitat creation; and the design of green space to enhance green infrastructure and recreational opportunities within the site.

12.5 Receptors to be Considered as part of EIA

12.5.1 The assessment of potential effects of the scheme on ecological receptors has been informed by the baseline survey work and the evolving masterplan.

12.5.2 The potential for ecological features to be affected as a result of the proposed development will be assessed, taking into consideration any direct loss of habitats and associated flora or fauna; indirect effects on flora or fauna; effects on any sites of nature conservation importance; and specific effects on protected species, both during the construction and operational phase of the development.

12.5.3 The effects to be considered will include:

Construction Phase

- Land-take (construction)
- Disturbance (visual, noise)
- Hydrology and pollution (dust generation, pollution of aquatic habitats)
- Lighting (construction)

- Construction site hazards

Operational Phase

- Anthropogenic / urban effects (including recreational pressure, disturbance etc)
- Air Quality / Pollution and Hydrology
- Permanent Lighting

12.6 Scoping Assessment Summary

12.6.1 The scoping assessment concludes that there is the potential for significant ecological effects to arise as a result of the development and that further assessment will therefore be required in the next stage of the EIA.

12.6.2 This assessment will be undertaken in accordance with the methodology provided in Appendix 1.

13.0 Ground Conditions

13.1 Introduction

13.1.1 This chapter provides the geology, soils and hydrogeology scoping assessment. The chapter provides a summary of the potential receptors and how these will be addressed in the EIA and presented in the subsequent ES.

13.2 Baseline Conditions

13.2.1 There are two historic lanfill pits located on the site, one of which lies to the north of the main block of woodland running through the centre of the site and one of which lies to the south. The two pits which comprise Cheshunt Park Farm Quarry were historically used as landfill sites and received waste in the 1990's; the waste was considered inert and comprised glass, concrete, bricks, tiles, soil and stone.

13.2.2 The site is underlain by bedrock compromising London Clay Formation, clay, silt and sand. Superficial deposits include Taplow Gravel Formation - sand and gravel, Alluvium – clay, silt, sand and gravel and Enfield Silt Member – clay and silt.

13.3 Further Assessment/ Consultation

13.3.1 Consultation will be undertaken with the Local Authority's Contaminated Land Officer and Environment Agency to capture additional site-specific information, aid the development of the conceptual site model, finalise the supplementary site investigation design and discuss the site investigation findings.

13.3.2 WYG has undertaken a gap analysis in relation to the existing baseline information and determined that additional site investigation works are required specific to the proposed development and to determine the ground conditions.

13.4 Mitigation within the Submitted Design

13.4.1 It is not considered that the development scheme would generate significant waste soils requiring offsite disposal. It is considered that documents such as an earthworks strategy, Materials Management Plan (in accordance with CL:AIRE Code of Practice for the Definition of Waste) or alternatively environmental permits / exemptions may be necessary to control the re-use of any site won soil arisings or the excavation of materials.

13.4.2 The mitigation measures required will be described in the ES so that their effectiveness at reducing or removing significant effects can be understood.

13.5 Receptors to be Considered as part of EIA

13.5.1 The following sections identify the receptors we consider could potentially be significantly impacted, as a result of the Proposed Development and will thus be assessed within the ES. Additional receptors may be included if identified by further technical study.

13.5.2 As part of this scoping opinion we request that BBC provide details of any additional receptors they consider should be included.

Construction Phase

13.5.3 An assessment of potential construction effects on the following receptors will be undertaken within the ES.

- Health & safety risks to site workers and the general public;
- Stability issues;
- Release of contaminants and/or creation of new preferential pathways by which existing ground contamination may enter controlled waters;
- Changes to local groundwater regime; and,
- Loss of agricultural land or mineral resouce.

Operational Phase

13.5.4 An assessment of potential operational effects on the following receptors will be undertaken within the ES.

- Stability issues;
- Release of contaminants and/or creation of new preferential pathways by which existing ground contamination may enter controlled waters;
- Changes to local groundwater regime; and
- Future users of the site.

13.6 Scoping Assessment Summary

13.6.1 The scoping assessment concludes that there is the potential for significant geology, contaminated land issues, soils and hydrogeology effects to arise as a result of the development, and further consideration will therefore be required in the subsequent stage of the EIA.

13.6.2 This assessment will be undertaken in accordance with the methodology provided in Appendix 1.

14.0 Socio-economics

14.1 Introduction

14.1.1 This chapter provides the socio economic scoping assessment and discusses the potential for the development to significantly affect this aspect of the environment.

14.2 Baseline Conditions

14.2.1 The Site is located to the north of the town of Cheshunt and west of the villages of Turnford and Wormley, in the Borough of Broxbourne, Hertfordshire.

14.2.2 It is 12 miles (19 km) north of central London and has a population of around 52,000 according to the United Kingdom's 2001 Census. Due to its good transport links and close proximity to London much of the surrounding area is given over to residential development.

14.2.3 The Site is dominated by arable fields and woodland, therefore the site's contribution to the local economy is considered to be slight.

14.3 Further Assessment/ Consultation

14.3.1 None required.

14.4 Mitigation within the Submitted Design

14.4.1 No mitigation relevant to socio economics is specified within the design above and beyond the provision of housing and land for employment use.

14.5 Receptors to be Considered as part of EIA

Construction Phase

14.5.1 The impacts of the construction phase of the proposed development on the following receptors/indicators will be assessed:

- Employment opportunities during construction (direct jobs); and
- Indirect and induced jobs e.g. local construction suppliers.

Operational Phase

14.5.2 The impacts of the operational phase of the proposed development on the following receptors/indicators will be assessed:

- Employment opportunities as a result of the employment land;
- Increase in population arising from the 1500 additional residential properties;
- Potential benefits for the local labour market (increase in skilled workforce);
- Expenditure as a result of the additional residents;
- Capacity of local health services to manage the increase in residential population;
- Capacity of educational facilities to manage increase in residential population; and
- Provision of recreation facilities within the vicinity of the site.

14.6 Scoping Assessment Summary

14.6.1 The results of the scoping assessment conclude that there is potential for significant socio-economic effects to arise as a result of the development, specifically with respect to employment opportunities and the impact of the associated expenditure on the local economy. As such it is proposed to include a socio economic chapter within the ES.

14.6.2 This assessment will be undertaken in accordance with the methodology provided in Appendix 1.

Environmental Topics to be 'Scoped Out' of the EIA

15.0 Waste

15.1 Introduction

15.1.1 This chapter provides the waste scoping assessment and discusses the potential for the development to significantly affect this aspect of the environment.

15.2 Baseline Conditions

15.2.1 The site is in mainly agricultural use and is currently considered to produce negligible waste.

15.3 Mitigation within the Submitted Design

15.3.1 The construction mitigation will include the implementation of a Construction Environmental Management Plan (CEMP). This CEMP will include the provision of a Site Waste Management Plan (SWMP) and the use of modern methods of construction. Waste will be managed in accordance with the Waste Hierarchy, and as such waste minimisation will be given the highest priority.

15.4 Potential Environmental Effects of the Scheme

15.4.1 The key sensitive receptors to impacts arising from the generation of waste, during both the construction and operational phases of the Proposed Development, are;

- Waste Infrastructure Capacity
- Human Receptors; and,
- Environmental Receptors

Construction Phase

15.4.2 The proposed development will result in the production of construction and excavation waste (primarily comprising inert soils, bricks, concrete, cladding, steel, timber, glass etc.) during the construction phase.

15.4.3 Steps to manage this waste will be outlined in a Site Waste Management Plan. This will include the use of best practice in waste segregation and phasing of the project to maximise reuse and recycling opportunities during the construction phase of the proposed development, which will be undertaken either on or off site depending on the volume of waste produced. The impact on Waste Infrastructure Capacity is therefore deemed to be negligible.

15.4.4 Based on the use of best practice waste management techniques outlined in the SWMP, the risk of harm to human and environmental receptors is also deemed to be negligible.

Operational Phase

15.4.5 Municipal, commercial and industrial waste will be produced during the operational phase.

15.4.6 Assuming the implementation of a SWMP and considering the fact that the waste generated by the proposed development has been accounted for strategically in the County's waste strategy as a result of the site being allocated for residential development.

15.4.7 In respect to operational waste a number of measures will be implemented to reduce waste generation and encourage recycling and re-use. Assuming this, the impact on identified receptors during the operational phase is deemed to be negligible.

15.5 Scoping Assessment Summary

15.5.1 The results of the scoping assessment conclude that there is limited potential for significant waste effects to arise as a result of the development and as such this topic is scoped out of further assessment within the ES. Waste will be addressed in the front end of the ES, including details of such design features discussed in the section above. Table 15.1 shows a summary of potential effects in response to waste.

Table 15.1 – Assessment of Potential Effects - Waste

Summary description of the identified impact	Sensitivity of Receptor	Impact Magnitude	Significance and Nature of Effect	Additional Mitigation	Residual Impact Magnitude	Residual Significance and Nature of Effect	Confidence Level
Construction Phase							
Waste Infrastructure Capacity	Very High	Negligible	Neutral	None Required	Negligible	Neutral	High
Human and Environmental Receptors	Very High	Negligible	Neutral	None Required	Negligible	Neutral	High
Operational Phase							
Waste Infrastructure Capacity	Very High	Negligible	Neutral	None Required	Negligible	Neutral	High
Human and Environmental Receptors	Very High	Negligible	Neutral	None Required	Negligible	Neutral	High

16.0 Lighting

16.1 Introduction

16.1.1 This chapter provides the lighting scoping assessment and discusses the potential for the development to significantly affect this aspect of the environment.

16.2 Baseline Conditions

16.2.1 The main located residential receptors are located to the east of the A10 in Wormley and Turnford and a limited number are located to the west and north of the site albeit these receptors are largely isolated from the site boundaries by mature blocks of woodland.

16.2.2 In addition to residential receptors, ecological receptors are present onsite including the network of woodlands water courses and hedgerows. Such receptors are of high sensitivity.

16.2.3 The baseline environment will be established by measuring existing pre-curfew and post-curfew lighting conditions. Both existing and proposed residential receptors as well as ecological receptors will be considered.

16.3 Mitigation within the Submitted Design

16.3.1 The lighting of the Proposed Development will be designed in accordance with relevant standards.

16.3.2 During the construction phase, the CEMP will include good practice measures to be implemented across the Site. The measures to be implemented include:

- specified working hours, uses of lighting, locations of floodlights;
- lighting to be switched off unless specifically needed; and
- barriers to be erected to shield adjacent receptors where appropriate.

16.3.3 An appropriate lighting scheme will be incorporated into the development design that will mitigate light spill on to ecological receptors e.g. woodland, water courses etc.

16.4 Potential Environmental Effects of the Scheme

Construction Phase

16.4.1 The onsite temporary light fittings, construction compounds and on Site security lighting associated with preparation and construction have the potential to result in sky glow and light trespass or 'spill' impacting sensitive local and ecological receptors.

16.4.2 The level of light will be dependent on the location of the construction activities on a daily basis and the equipment being used, with light levels being attenuated as the distance between the source and receptor increases. Any impacts would be temporary.

16.4.3 Through the implementation of a CEMP, the potential impact of construction lighting is deemed to be negligible.

Operational Impacts and Effects

16.4.4 Lighting associated with the operational phase of the proposed development has the potential to impact on receptors of ecological sensitivity within the vicinity of the site.

16.4.5 As there will be a requirement to meet standard guideline criteria, through good design incorporating the use of buffers and consented conditions, significant adverse effects are considered unlikely to occur and the impact is deemed to be negligible.

16.5 Scoping Assessment Summary

16.5.1 This assessment concludes that it is unlikely that the development will produce any significant negative lighting effects. It is therefore concluded that it is not necessary to provide a separate Lighting chapter within the proposed EIA and therefore it has been scoped out of further assessment. A lighting assessment will however be completed as part of the planning application.

16.5.2 As the development will adhere to best practice guidance in respect to lighting, it is deemed that rather than considering the effects of lighting in a standalone chapter, it is proposed to address the issue of lighting design within the development description and design chapter. In addition lighting will be considered and discussed within the appropriate technical chapters, most notably ecology, where relevant. Table 16.1 shows a summary of potential effect in response to lighting.

Table 16.1 – Assessment of Potential Effects – Lighting

Summary description of the identified impact	Sensitivity of Receptor	Impact Magnitude	Significance and Nature of Effect	Additional Mitigation	Residual Impact Magnitude	Residual Significance and Nature of Effect	Confidence Level
Construction Phase							
Impact on local sensitive receptors	Very High	Negligible	Neutral	None Required	Negligible	Neutral	High
Impact on ecological receptors	Very High	Negligible	Neutral	None Required	Negligible	Neutral	High
Impact on sky glow levels	Very High	Negligible	Neutral	None Required	Negligible	Neutral	High
Operational Phase							
Impact on local sensitive receptors	Very High	Negligible	Neutral	None Required	Negligible	Neutral	High
Impact on ecological receptors	Very High	Negligible	Neutral	None Required	Negligible	Neutral	High
Impact on sky glow levels	Very High	Negligible	Neutral	None Required	Negligible	Neutral	High

17.0 Climate Change

17.1 Introduction

17.1.1 This chapter provides the climate change scoping assessment and discusses the potential for the development to significantly affect this aspect of the environment.

17.2 Baseline Conditions

17.2.1 UK Climate Projections 2009 (UKCP09) is the official source of climate projections in the UK. It is funded by the Department for Environment, Food & Rural Affairs (DEFRA) and the Department of Energy & Climate Change (DESS) in partnership with the Met Office, EA and Tyndall Centre, amongst others.

17.2.2 The UKCP09 Projections show a general trend of:

- *Increased summer temperatures;*
- *Increased winter temperatures – the UK's winters will also be milder with the average temperatures being 2.2°C warmer;*
- *Reduced summer rainfall – there may be a 16% decrease in summer rainfall making the UK's summers much drier; and*
- *Increased winter rainfall – winters will be wetter with an average of 14% more rainfall.*

17.2.3 The Site is in mainly agricultural use and is considered currently to have negligible impact on climate change.

17.3 Mitigation within the Submitted Design

17.3.1 The Proposed Development will be designed in accordance with relevant building regulations.

17.4 Potential Environmental Effects of the Scheme

Construction Phase

17.4.1 The construction phase has the potential to increase greenhouse gas emissions due to:

- Emissions from construction plant on site; and
- Exhaust emissions from construction phase road traffic.

Operational Impacts and Effects

17.4.2 Once operational the development has the potential to increase greenhouse gas emissions due to:

- Road vehicle exhaust emissions associated with vehicles travelling to and from the Proposed Development; and
- Household and non-residential emissions from operational users.

17.5 Scoping Assessment Summary

17.5.1 The assessment concludes that it is unlikely that the development will produce any significant impact upon climate change and therefore this topic has been scoped out of further assessment.

17.5.2 It is considered that any development that is not carbon neutral, given the sensitivity of the receptor (global climate), would result in a significant adverse effect. Therefore, rather than considering the effects of climate change in a standalone chapter, it is proposed to address the issue of mitigation (carbon reduction) within the development description and design chapter. In addition climate change adaption is considered and discussed within the appropriate technical chapters where relevant, for example through the hydrology chapter. Table 17.1 shows a summary of potential effects in response to climate change.

Table 17.1 – Assessment of Potential Effects – Climate Change

Summary description of the identified impact	Sensitivity of Receptor	Impact Magnitude	Significance and Nature of Effect	Additional Mitigation	Residual Impact Magnitude	Residual Significance and Nature of Effect	Confidence Level
Construction Phase							
GHG emissions during construction, associated with emissions from site plant and construction traffic, embodied carbon of construction materials.	Very High	Slight	Intermediate Effect (Adverse, permanent, long-term, irreversible and cumulative. Both direct and indirect)	None proposed	Slight	Intermediate Effect (Adverse, permanent, long-term, irreversible and cumulative. Both direct and indirect)	High
Operational Phase							
GHG emissions associated with heating, lighting and other equipment, embodied carbon from increased transport.	Very High	Slight	Intermediate Effect (Adverse, permanent, long-term, irreversible and cumulative. Both direct and indirect)	None proposed	Slight	Intermediate Effect (Adverse, permanent, long-term, irreversible and cumulative. Both direct and indirect)	High

18.0 Human Health

18.1 Introduction

18.1.1 This chapter provides the human health scoping assessment and discusses the potential for the development to significantly affect this aspect.

18.2 Baseline Conditions

18.2.1 The site is mainly occupied by open green space and agricultural fields.

18.3 Mitigation within the Submitted Design

18.3.1 The Proposed Development will be designed to abide by current housing safety regulations.

18.3.2 During construction, activities will be controlled through the CEMP which will ensure compliance with the health and safety Construction (Design and Management) Regulations (2015).

18.4 Potential Environmental Effects of the Scheme

18.4.1 A number of aspects of the construction phase have the potential to affect human health, these include:

18.4.2 With respect to air quality:

- The generation of dust during construction activities.
- Emissions from construction plant on Site; and, exhaust emissions from construction phase road traffic.

18.4.3 With Respect to Noise:

- Increase in noise and vibration as a result of construction activities.

18.4.4 With Respect to Ground Conditions:

- Potential exposure to construction workers of existing ground contamination.

18.4.5 With respect to Traffic:

- Increase in construction traffic entering Site and on the local road network.

18.4.6 With respect to Socio Economic effects:

- Increase in direct and indirect employment opportunities associated with the construction works.

Operational Impacts and Effects

18.4.7 A number of aspects of the operational phase have the potential to affect human health, these include:

18.4.8 With respect to air quality:

- Vehicle emissions from increases in road traffic associated with the completed development.

18.4.9 With Respect to Noise:

- Increase in noise from increases in road traffic associated with the completed development.

18.4.10 With respect to Traffic:

- Increase in congestion, driver delay, conflicts with non-motorised forms of transport etc, associated with the completed development.

18.4.11 With respect to Socio Economic effects:

- Increase in provision of affordable housing.
- Increase in housing provision in an area of high housing demand.
- Provision of public open space.

18.5 Scoping Assessment Summary

18.5.1 It is proposed that these human health issues will be considered within specific topic chapters namely socio economic, air quality, transport, ground, noise and vibration. Human health will therefore not be assessed as a separate chapter within this ES. Table 18.1 shows a summary of potential effects in relation to human health.

Table 18.1 – Assessment of Potential Effects – Human Health

Summary description of the identified impact	Sensitivity of Receptor	Impact Magnitude	Significance and Nature of Effect	Additional Mitigation	Residual Impact Magnitude	Residual Significance and Nature of Effect	Confidence Level
Construction Phase							
Air Quality (Dust and vehicle generated pollution)	High	To be assessed in relevant ES Chapter					
Noise & Vibration	High	To be assessed in relevant ES Chapter					
Traffic	High	To be assessed in relevant ES Chapter					
Ground Conditions	High	To be assessed in relevant ES Chapter					
Direct Employment Opportunities e.g. construction	Very High	Medium	Moderate Beneficial, Direct, Reversible, Short Term	None required	Medium	Moderate Beneficial, Direct, Reversible, Short Term	High
Indirect Employment opportunities	High	Slight	Low Beneficial, Direct, Reversible, Short Term	None required	Slight	Low Beneficial, Direct, Reversible, Short Term	High
Operational Phase							

Air Quality (Dust and vehicle generated pollution)	High	To be assessed in relevant ES Chapter					
Noise & Vibration	High	To be assessed in relevant ES Chapter					
Traffic	High	To be assessed in relevant ES Chapter					
Employment Opportunities e.g. primary school	Very High	Slight	Low Beneficial, Direct, Permanent, Long Term	None required	Slight	Low Beneficial, Direct, Permanent, Long Term	High
Social and Community Demands	Very High	Negligible	Neutral	None Required	Negligible	Neutral	High
Open spaces	Very High	Slight	Low Beneficial, Direct, Permanent, Long Term	None required	Slight	Low Beneficial, Direct, Permanent, Long Term	High

19.0 Major Accidents, Fire and Natural Disasters

19.1 Introduction

19.1.1 This chapter provides the major accidents, fire and natural disasters scoping assessment and discusses the potential for the development to significantly affect this aspect of the environment.

19.2 Baseline Conditions

19.2.1 The site is in mainly agricultural use and is therefore currently considered to be at negligible risk of Major Accidents, Fire and Natural Disasters.

19.3 Mitigation within the Submitted Design

19.3.1 The Proposed Development will be designed to current best practice, in respect of road safety, drainage design and building regulations.

19.3.2 During construction, activities will be controlled through the CEMP which will ensure compliance with the health and safety Construction (Design and Management) Regulations (2015).

19.4 Potential Environmental Effects of the Scheme

19.4.1 Given the proposed housing and commercial use of this development, the potential for either large volume storage or frequent passage / delivery of fuels and chemicals during both construction and operation is considered to be low. This is in comparison to more industrial sites such as chemical works, storage depots, docks, major highways etc.

19.5 Scoping Assessment Summary

19.5.1 It is therefore considered that while there is always a potential risk that a major accident, fire or natural disaster could result in a significant environmental impact, given the nature of the Proposed Development, this risk can be appropriately mitigated though embedded design measures and through compliance with statutory design guidelines. It is therefore proposed that major accidents, fire and natural disasters are not assessed as a separate chapter within this ES. Table 19.1 shows a summary of potential effect in response to major accidents, fire and natural disasters.

Table 19.1 – Assessment of Potential Effects – Major Accidents, Fire and Natural Disasters

Summary description of the identified impact	Probability of Risk	Potential Severity	Significance and Nature of Effect	Additional Mitigation	Confidence Level
Handling of hazardous materials	Unlikely	Severe	Low/Moderate	While no significant impacts have been identified during construction, activities will be controlled through a CEMP which will ensure compliance with the health and safety Construction Regulations	High
Risks from spills, fire or explosion	Unlikely	Severe	Low/Moderate		High
Risks of traffic accidents (including spillages and pollution incidents)	Unlikely	Severe	Low/Moderate		High
Risks from spills, fire or explosion	Unlikely	Severe	Low/Moderate	None Required	High
Risks of traffic accidents (including spillages and pollution incidents)	Unlikely	Severe	Low/Moderate	None Required	High

20.0 Conclusion

20.1.1 This scoping report concludes that the topics which will need to be assessed and included as separate ES topics in the proposed ES are as follows:

- Traffic and Transport;
- Noise and Vibration;
- Air Quality;
- Landscape & Visual Impact Assessment (including arboriculture);
- Archaeology and Cultural Heritage;
- Hydrology and flooding;
- Ecology;
- Ground conditions (including ground contamination); and
- Socio-Economics.

20.1.2 The supporting documents to be submitted alongside the ES will include:

- Planning Statement;
- Design and Access Statement;
- Arboricultural Statement;
- Lighting Assessment and,
- Topographical Survey.

20.1.3 This ES scoping assessment has identified a number of topics which it is considered are unlikely to have significant effects as mitigation is to be implemented through sensitive design and/or the implementation of good practice working measures during construction which will negate any likely impacts. As such based on this detailed scoping assessment the following topics have been scoped out of the ES:

- Lighting;
- Waste;
- Climate Change;
- Human Health; and
- Major accidents, fire and natural disasters.

20.1.4 The topics detailed above will not be included in the ES as separate ES chapters. However, the relevant technical reports relating to each topic will be summarised in the front end chapters of the ES and these technical reports will be submitted with the application as stand-alone documents.

Appendix 1 – Assessment Methodologies

Traffic and Transport methodology

The methodology we will use for the assessment is based on the Institute of Environmental Assessment guidance document entitled 'Guidelines for Environmental Assessment of Road Traffic'. The purpose of the guidance is to provide a systematic framework for the appraisal of road traffic effects arising for a wide range of developments.

The guidance identifies that the effect of road traffic is dependent on a wide range of factors, the most common being:

- Volume of traffic, in particular the change in volume;
- Traffic speeds and operational characteristics; and
- Traffic composition e.g. percentage of Heavy Good Vehicles (HGV).

The perception of effect will also vary depending on factors such as location, existing traffic volumes, time of day and land use adjacent to the road network. For example, an increase in daytime movements, when general traffic volumes are lower, will be more noticeable than an increase which occurs during the morning and evening peak hours when existing volumes are high. Similarly, an increase in HGV movements would be less noticeable to people at work in a noisy factory adjacent to the road, compared with a residential dwelling or park. This is especially true during the construction phases of the development.

The assessment of the environmental effects of traffic will comprise a number of stages, including the determination of existing and forecast traffic levels, identification of characteristics and the definition of the spatial and temporal scope for the assessment.

Spatial Scope

The guidelines suggest that two broad rules should be applied to determine the spatial scope of the assessment, which is based on the change in traffic volumes on the road network:

- Highway links where traffic flows increase/decrease by more than 30 percent; and
- If adjacent to a sensitive area, highway links where traffic flows increase/decrease by more than 10 percent.

Day to day variation in traffic levels is typically around 10 percent, meaning that an increase in traffic levels of less than 10 percent is unlikely to have a discernible environmental effect and would not require assessment.

The assessment will consider the vehicle generation associated with both the construction and occupation phases, and will primarily focus on the suitability of the highway links and the effect of any works required at the junctions to accommodate the increase in traffic volumes during the occupation phase of the development.

Identification of Receptors

The following transport and highway receptors have potentially to be affected by traffic generated by the proposed development:

- Road users (vehicles and non-motorised users); and
- Road links / junctions (within the scope of the Transport Assessment).

The receptors will vary in sensitivity at various points along the highway network according to the local circumstances. For example, the sensitivity of road users will vary according to their proximity to the proposed access routes.

Assessment Criteria

Typically, a transport and access chapter for an ES would use criteria based on the percentage change in traffic to determine the magnitude of change, which, combined with the sensitivity/importance of receptors, would determine the significance of the effect.

The approach to assessment is focussed on effects during construction and occupation. Potential significance of effects will be identified and assessed using the following qualitative criteria:

- Substantial: the proposed development will affect conditions for all receptors and will significantly affect the highway network;
- Moderate: the proposed development will affect conditions for some receptors and will affect the highway network in the local area;
- Slight: the proposed development will affect conditions for some receptors but will only affect a very small area, and only slightly affect the highway network in the local area; and
- Negligible: no change in conditions for receptors, nor effects on the highway network in the area based upon the thresholds set out in the assessment criteria as discussed under impacts.

Receptors

Table 1.1 sets out the traffic and transport receptors to be included in the assessment.

Table 1.1 Traffic and Transport Receptors

Designation	Development Receptors
International	European Transport Network
National	Road network managed by Highways England
County	Strategically important junctions
Borough	Major road network managed by Local Authority
Local/Neighbourhood	Local Road Network managed by Local Authority; Pedestrians, Cyclists using all other rights of way

Impacts Motorised Users

Table 1.2 sets out the impact on motorised users.

Table 1.2 Impacts: Motorised users

Designation	Development Receptors
Substantial	Measurable change in AADT traffic flows above baseline of 90%
Moderate	Measurable change in AADT traffic flows above baseline of 60%
Slight	Measurable change in AADT traffic flows above baseline of 30%
Negligible	Measurable change in AADT traffic flows below baseline of 30%

Impacts Non-Motorised Users

Table 1.3 sets out the impact on non-motorised users.

Table 1.3 Impacts: Non-motorised users

Designation	Development Receptors
Substantial	People are likely to be deterred from making pedestrian journeys to an extent sufficient to induce a reorganisation of their activities (i.e. journeys increased by over 500m). This includes routes used for travel between community facilities. Journey lengths significantly increased in a negative impact or substantially enhanced recreational routes resulting in positive impact.

Designation	Development Receptors
	Severance/intimidation impact ≥90% change in traffic flow (24 hour).
Moderate	Some people, particularly children and old people, are likely to be dissuaded from making journeys on foot. For others, pedestrian journeys will be longer or less attractive. This occurs on routes used for travel between community facilities. Journey lengths materially increased in a negative impact or improved recreational routes resulting in positive impact. Severance/intimidation impact ≥60% change in traffic flow (24 hour).
Slight	All people wishing to make pedestrian movements will be able to do so, but there will probably be some hindrance to movement. This occurs on routes used for travel between community facilities. Severance/intimidation impact ≥30% change in traffic flow (24 hour).
Negligible	Little or no hindrance to pedestrian movement.

It should be noted that for the purposes of this assessment, any effect that is predicted to result in an impact of moderate or above will be considered to represent a significant effect (both positive and adverse). Hence, mitigation measures will be required to reduce the effect to slight - adverse or better.

Noise and Vibration methodology

Identified Receptors

Key receptors to noise generally include individual or groups of residential properties, hospitals and schools. In accordance with the NPPF, the tranquillity of the site and surrounding area will be been considered. Areas of tranquillity in England have been mapped by the CPRE with the findings published in 2007.

Table 2.4 Methodology for Assessing Sensitivity of Noise and Vibration

Sensitivity	Example of Receptor
Very high	Hospitals
High	Residential properties (Permanent tenants) and Schools
Medium	Transient residential receptors such as users of hotels, Non-motorised Users including pedestrians and cyclists on trails of national importance
Low	Commercial premises

Determining Impact Magnitude of Effect

Guidance with regard to assessing the magnitude of noise impact is available within the Guidelines for Environmental Noise Impact Assessment been jointly issued by the Institute of Environmental Management and Assessment (IEMA) 2014. The guidance indicates broad parameters with respect to categorising the basic noise change. For the purpose of this assessment, the categories outlined in Table 2.2 below form a broad basis to present the impact magnitude. The categories are comparable to the categorisation of the noise level change presented within the IEMA guidance document. A change in noise level of less than 1 dB(A) is considered to be imperceptible, therefore changes in noise levels of between 0.1 – 0.9 will refer to a negligible impact.

Table 2.5 Method for Assessing the Magnitude of the Impact

Change in noise level (dB(A))	Category
0	No Impact
0.1 – 0.9	Negligible Impact
1.0 – 2.9	Slight Impact
3.0 – 4.9	Moderate Impact
5.0	Substantial Impact

As human perception to noise is subjective, a flexible approach to the categories specified in Table 2.2 will be undertaken in the context of the Proposed Development and the location of the Site. The IEMA guidance stipulates that the noise level categories should not be used strictly to define the description of the noise change as there is no simple formulaic approach for relating noise change to a verbal description such as 'slight' or 'moderate'. Therefore, the magnitude of noise impact should be stated as the predicted dB(A) level and not simply as an impact category.

With regard to road traffic noise, Tables 3.1 and 3.2 of DMRB Volume 11 Section 3 Part 7 (HD 213/11) present examples classification of the magnitude of noise impacts in the short and long term suitable for the assessment of changes in traffic noise levels. Table 3.1 of DMRB has the same categories as those presented in Table 2.2. Therefore, the magnitude of road traffic noise impacts in the short term is based on the method presented in Table 2.2. For long term impacts, the impact magnitude classification is presented in Table 2.3 below. To ensure consistency with the WYG framework terminology, the DMRB descriptors have been translated into WYG terminology.

Table 2.6 Classification of Magnitude of Road Traffic Noise Impacts in the Long Term

Change in noise level (dB(A))	Magnitude
0	No Impact
0.1 – 2.9	Negligible
3 – 4.9	Slight Impact
5 – 9.9	Moderate Impact
10+	Substantial Impact

Determining the Significance of Potential Effects (Based on a Matrix Approach)

The level of significance of each effect is determined by combining the impact risk with the sensitivity of the receptor. Table 2.4 shows how the interaction of magnitude and sensitivity can be combined to determine the significance of an environmental effect.

If an impact magnitude is negative then the resulting effect is described as being adverse; if an impact magnitude is positive the resulting effect is classed as being beneficial.

Table 2.7 Significance of Effects Matrix

Sensitivity of Receptor	Magnitude of Impact			
	Substantial magnitude	Moderate magnitude	Slight magnitude	Negligible magnitude
Very High	Major	Major	Intermediate	Neutral
High	Major	Intermediate	Minor	Neutral
Medium	Intermediate	Minor	Minor	Neutral
Low	Minor	Minor	Neutral	Neutral

Further to the matrix presented in Table 2.4 where there is no impact predicted, then the significance of the effect will be neutral for all receptors.

For the purposes of this assessment an effect identified as being of intermediate significance or greater, based on the descriptors presented in, is considered to be significant. This equates to an increase or decrease in noise level of 3 dB(A) as a result of the Proposed Development at receptors of high sensitivity (e.g. residential receptors). For the long term effects of the road traffic, this equates to an increase or decrease in noise level of 5 dB(A) as a result of the Proposed Development at receptors of high sensitivity.

Air Quality methodology

The significance of the effects during the operational phase of the development is based on the latest guidance produced by EPUK and IAQM in May 2015.

The following rationale will be used in determining the severity of the air quality effects at individual receptors:

- The change in concentration of air pollutants and air quality effects, will be quantified and evaluated in the context of Air Quality Objectives (AQOs). The effects will be provided as a percentage of the Air Quality Assessment Level (AQAL), which may be an AQO, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)';

- The absolute concentrations will also be considered in terms of the AQAL and are divided into categories for long term concentration. The categories are based on the sensitivity of the individual receptor in terms of harm potential. The degree of harm potential to change increases as absolute concentrations are close to or above the AQAL;

- Severity of the effect will be described as qualitative descriptors; negligible, slight, moderate or substantial, by taking into account in combination the harm potential and air quality effect. This means that a small increase at a receptor which is already close to or above the AQAL will have higher severity compared to a relatively large change at a receptor which is significantly below the AQAL;

- The effects can be adverse when air quality concentration increase or beneficial when concentration decrease as a result of development;

- The judgement of overall significance of the effects will then be based on severity of effects on all the individual receptors considered; and,

- Where a development is not resulting in any change in emissions itself, the significance of effect is based on the effect of surrounding sources on new residents or users of the development, i.e., will they be exposed to levels above the AQAL as detailed in Table 3.1

Table 3.1 -Significance of Effects Matrix

Long term average concentration at receptor in assessment year	% Change in concentration relative to AQAL			
	1	2-5	6-10	>10
≤75% of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109 of AQAL	Moderate	Moderate	Substantial	Substantial
≥110 of AQAL	Moderate	Substantial	Substantial	Substantial

Landscape and Visual Impact

The methodology used for assessing the landscape and visual effects will based on the recommendations in Guidelines for Landscape and Visual Impact Assessment 3rd Edition published by the Landscape Institute and the Institute of Environmental Management & Assessment in 2013 (GLVIA3).

The assessment process will comprise a combination of desk studies and field surveys, with subsequent analysis, and involves:

- A review of landscape designations and planning policies for the landscape, and of other landscape studies relevant to the area, as indicators of landscape value, including national and local landscape character assessments;
- A survey of the Site and landscape context study areas and inspection of views of the Site from publicly accessible viewpoints, including a photographic survey. The proposed viewpoints will be discussed with the local planning authority;
- Evaluation of the features and elements of the landscape and their contribution to the landscape character, context and setting, based on these studies;
- Analysis of the development proposals and consideration of potential landscape and visual effects of the proposed development;
- Assessment of the susceptibility, value and sensitivity of the landscape to the changes likely to arise from the development;
- Identification of the extent of theoretic visibility of the development and potentially sensitive receptors, supported by a viewpoint analysis;
- Consideration of proposals for mitigation measures to avoid, reduce or offset adverse effects;
- Assessment of magnitude of change and the degree and nature of effects on the landscape and on visual amenity, with the mitigation proposals in place; and
- Assessment of the significance of these affects in EIA terms

Photography

Photographs have a special role in describing landscape character and illustrating key views. In order for photographs to be representative and to create an image that is as similar as possible to that which is seen with the human eye, accepted practice is to use a lens with a focal length equivalent to 50 mm for a 35 mm Single Lens Reflex (SLR) camera, and a horizontal field of view of a little under 40 degrees. The camera used for the appraisal and assessment photography will be a Canon EOS 5D MKIII digital SLR camera on a tripod with levelled panoramic head. Photographs will be taken with a fixed lens of focal length 50mm.

Landscape photography includes wide angle or panoramic views requiring a sequence of photographs to be taken across the view. Where this approach is taken, a series of overlapping photographs are digitally spliced together in Adobe Photoshop CS to provide a panorama approximating to the normal field of view in a landscape context. Where necessary, the contrast and brightness of individual photographs will be slightly manipulated in order to create a consistent panorama without noticeable joins. The viewpoints will be located using a camera mounted GPS device and verified against Ordnance Survey grid reference and height above Ordnance Datum. The photographs representing the viewpoints within this assessment will be 90 degree views.

Zone of Theoretical Visibility

ZTV's will be based upon a digital terrain model generated from a 5m grid interval dataset: Ordnance Survey OS Terrain 5® dataset. The ZTVs are based upon topographic data only; minor undulations in the terrain may not be reflected in the 5m grid interval of the dataset. Similarly, the screening effects of surface features such as buildings are not taken into consideration during the preparation of the ZTV.

A second ZTV will be produced based upon the same dataset as set out above but the screening effect of woodland and buildings will be taken into consideration using Ordnance Survey Open Map Local ESRI® Shapefile data. Woodland will be given a mean average height of 10m and buildings a mean average height of 7m. The screening effects of other features such as individual trees and hedgerows will not be taken into consideration during the preparation of the ZTV.

Landscape Methodology

The sensitivity of landscape receptors is dependent on their value and susceptibility to, or ability to accommodate, the changes that would be brought about by the proposed development. The sensitivity of landscape receptors combines professional judgments of their susceptibility to the type of change arising from the development proposal and the value attached to the landscape or its components. The following

indicative categories of landscape sensitivity, or nature of the landscape receptor, will be considered in order to arrive at judgements on sensitivity.

Table 4.1 Indicative Criteria for assessing Landscape Sensitivity

Category	Indicative criteria
High sensitivity	A highly valued landscape e.g. of national or international importance, whose character or key characteristics are susceptible to change; Aspects of the landscape character are highly valued as "key characteristics" and susceptible to change in National or local character assessments; The landscape character is highly valued as intact and in good condition and particularly vulnerable to disturbance; A highly valued landscape with no or limited potential for substitution or replacement.
Moderate sensitivity	A landscape of local importance or value, whose character or key characteristics are susceptible to change; Other characteristics of the landscape character also noted in National or local character assessments and susceptible to change; The landscape character is valued for moderate condition and not particularly vulnerable to disturbance; A moderately valued landscape with some potential for substitution or replacement.
Lesser sensitivity	No or little evidence of value or importance attached to the landscape area, its features or characteristics; Few features, characteristics or qualities susceptible to disturbance or particularly susceptible to improvement or upgrading Good potential for substitution or replacement

These are the criteria against which receptors will be considered in order to arrive at a judgement as to their sensitivity, but it is not necessary for all the criteria set out for a category to apply.

Assessment criteria

The degree of the likely landscape effects of the Project is determined by relating the sensitivity of the receptors to the changes arising from the development proposals, and the degree and nature of the changes in the landscape arising from the proposals.

The scale of magnitude of the changes is related to considerations of the size or scale of the change, the geographical extent of the area influenced, and the duration and reversibility of the change. The scale of magnitude of the changes is graded, as follows:

Table 4.2 Indicative criteria for assessing Magnitude of Landscape Change

Magnitude of Change	Landscape Change
Great change	Major size or scale of change, affecting the landscape type or character of the area within which the proposal lies or extending over the wider area; continuing into the longer term or permanently, with low prospect of reversibility
Medium change	Intermediate size or scale of change, affecting part of the landscape type or character of the area within which the proposal lies, or larger scale of change at the level of the site or immediate context; continuing into the medium term, with good prospect of reversibility
Small change	A minor proportion of the extent of the character type or area is affected or smaller scale of change over a larger extent; the changes occur at the level of the site or immediate context, are short term and reversible.
Negligible/None	No change to landscape characteristics

The degree of effect, whether adverse or beneficial, is assessed by relating the sensitivity of the receptor and the magnitude of change, by considering the following indicative criteria:

Table 4.3 Indicative criteria for assessing Landscape Effects

Landscape effect	Indicative criteria
Major	Highly sensitive landscape completely degraded or greatly changed, with little or no scope for mitigation; Great improvement, sufficient to upgrade overall landscape character.
Moderate	Medium change to moderately sensitive landscape; lesser change to higher sensitivity landscape or greater change to less sensitive landscape.
Minor	Localised or limited adverse change to the existing landscape character; greater change to less sensitive landscape; Considerable scope for mitigation; Localised improvement to the existing landscape.
Negligible	Little or no perceived change to the existing landscape character; The change is difficult to discern.

Intermediate conditions may be described, such as Moderate-Major, where the criteria for Moderate may be exceeded but not qualify as Major. Where there is no magnitude of change, the effect would be none.

Major effects are likely to be considered "significant", especially if adverse and long term or not reversible, and Minor or Negligible effects as "not significant". The relative significance of intermediate or moderate effects will also be assessed. These are effects that are not significant, but may be important considerations in decision making about the proposed development.

In addition, in some instances the effect may be offset by other considerations, for example, through the mitigation proposals, and the resulting effect is neither beneficial nor adverse.

Visual Methodology

The sensitivity of viewers is affected by the susceptibility of the viewer to changes in views and visual amenity and the value attached to particular view locations and views. The context of the location contributes to susceptibility, for example, people viewing from residential properties or from a valued landscape are likely to be more susceptible to change than people viewing from an industrial context. Particular views may have importance and be valued, for example, as "classic" views depicted in art or reported in literature, or as part of the experience of a landscape of importance or promoted recreation facility or route.

The following criteria for visual sensitivity, combining susceptibility and value considerations, are used:

Table 4.4 Indicative criteria for assessing Visual Sensitivity

Category	Indicative criteria
High sensitivity	Viewers in residential or community properties with open views of the site Views experienced by many viewers Daily, prolonged or sustained views available over a long period, or where the view of the landscape is an important attractant A view from a landscape, recreation facility or route valued nationally or internationally for its visual amenity
Moderate sensitivity	Viewers in residential or community properties with partial or largely screened views of the site Frequent open views available of the site Viewers are pursuing activities such as sports or outdoor work, where the landscape is not the principal reason for being there or the focus of attention is only partly on the view A view of the site from other valued landscapes, or a regionally important recreation facility or route
Lesser sensitivity	A view of low importance or value, or where the viewer's attention is not focused their surroundings A view of the site from a landscape of moderate or less importance Occasional open views or glimpsed views available of the site passing views available to travellers in vehicles A view available to few viewers

Assessment Criteria

The degree of the likely visual effects of the Project will be determined by relating the sensitivity of the receptors and the changes in the landscape or view of the landscape to which they will be subjected. The

scale of magnitude of the changes in visual amenity is evaluated in terms of size or scale, the geographical extent of the area influenced, duration and reversibility, as follows:

Table 4.5 Indicative criteria for assessing Magnitude of Visual Change

Magnitude of Change	Visual Change
Great change	Major size or scale of change, affecting a large proportion of the angle of the view or affecting views from a wide area; continuing into the longer term or permanently, with low prospect of reversibility
Medium change	Intermediate size or scale of change, affecting angle of the view or affecting views from the wider context, or larger scale of change in views from within the site or immediate context; continuing into the medium term, with good prospect of reversibility
Small change	A minor proportion of the angle of view is affected or the contribution of the changed elements or characteristics to the composition of the view is not important; the changes are viewed from longer distances, are short term and reversible
Negligible/no change	Barely perceptible change

The degree of effect, whether adverse or beneficial, will be assessed by relating the sensitivity of the receptor and the magnitude of change, using the following indicative criteria:

Table 4.6 Indicative criteria for assessing Visual Effect

Visual effect	Indicative criteria
Major	Large or very large change or visual intrusion experienced by highly sensitive viewers or from highly sensitive public viewpoints The proposal would cause a great deterioration in the existing view Large or very large improvement in the view, sufficient to upgrade overall visual amenity
Moderate	Medium change or visual intrusion experienced by moderately sensitive viewers; lesser change to higher sensitivity viewers or greater change to less sensitive viewers
Minor	Small or localised visual intrusion in the existing view, especially for less sensitive viewers Localised reduction in visual intrusion, or improvement in the view
Negligible	The change in the view is imperceptible or difficult to discern

Major effects are likely to be considered "significant", especially if long term or permanent, and minor or negligible effects as "not significant". The relative significance of moderate effects will also be assessed. These are effects that are not significant, but may be important considerations in decision making about the proposed development.

In addition to these criteria, in some instances the effect may be discernible or greater, but offset by other considerations, for example, through the mitigation or restoration proposals, and the resulting effect is neither beneficial nor adverse.

Archaeology and Cultural Heritage

Archaeology

Introduction

The study area will be agreed with the Local Planning Authority HER for the archaeology baseline. A 2km study area has been used for the setting assessment (designated heritage assets only). These study areas have been chosen to encompass the development proposals and assess the nature of the surrounding cultural heritage assets and place the recorded sites within their context. The sources consulted will include:

- Historic England and Local Planning Authority for designated sites;
- Historic mapping;
- National Mapping Programme;
- Local Planning Authority Archaeology for Historic Environment Record (HER) data;
- National Record of the Historic Environment (NRHE) (formerly the National Monuments Record (NMR); and
- Appropriate documentary sources and archaeological journals.

Methodology for Assessing Impacts and Effects

Assessment of effects will be carried out through the consideration of baseline conditions in relation to the elements of the scheme that could cause cultural heritage effects. Baseline conditions are defined as the existing environmental conditions and in applicable cases, the conditions that would develop in the future without the scheme.

No standard method of evaluation and assessment is provided for the assessment of significance of effects upon cultural heritage, therefore a set of evaluation and assessment criteria have been developed using a combination of the Secretary of State's criteria for Scheduling Monuments (Scheduled Monument Statement), Design Manual for Roads and Bridges (DMRB), Volume 11, Part 3, Section 2, HA 208/07 and Transport Analysis Guidance (TAG Unit 3.3.9, Heritage of Historic Resources Sub-Objective).

Professional judgement will be used in conjunction with these criteria to undertake the assessment of effects. The criteria for assessing value and magnitude of change are outlined below.

Table 5.8 Assessing Heritage Value

Value	Examples
Very High	World Heritage Sites, Scheduled Monuments of exceptional quality, or assets of acknowledged international importance or can contribute to international research objectives. Grade I Listed Buildings and built heritage of exceptional quality. Grade I Registered Parks and Gardens and historic landscapes and townscapes of international sensitivity, or extremely well preserved historic landscapes and townscapes with exceptional coherence, integrity, time-depth, or other critical factor(s).
High	Scheduled Monuments, or assets of national quality and importance or than can contribute to national research objectives. Grade II* and Grade II Listed Buildings, Conservation Areas with very strong character and integrity, other built heritage that can be shown to have exceptional qualities in their fabric or historical association. Grade II* and II Registered Parks and Gardens, Registered Battlefields and historic landscapes and townscapes of outstanding interest, quality and importance, or well preserved and exhibiting considerable coherence, integrity time-depth or other critical factor(s).
Medium	Designated or undesignated assets of regional quality and importance that contribute to regional research objectives. Locally Listed Buildings, other Conservation Areas, historic buildings that can be shown to have good qualities in their fabric or historical association. Designated or undesignated special historic landscapes and townscapes with reasonable coherence, integrity, time-depth or other critical factor(s). Assets that form an important resource within the community, for educational or recreational purposes.
Low	Undesignated assets of local importance. Assets compromised by poor preservation and/or poor survival of contextual associations but with potential to contribute to local research objectives. Historic (unlisted) buildings of modest quality in their fabric or historical association. Historic landscapes and townscapes with limited sensitivity or whose sensitivity is limited by poor preservation, historic integrity and/or poor survival of contextual associations. Assets that form a resource within the community with occasional utilisation for educational or recreational purposes.
Negligible	Assets with very little or no surviving cultural heritage interest. Buildings of no architectural or historical note. Landscapes and townscapes that are badly fragmented and the contextual associations are severely compromised or have little or no historical interest.

Table 5.9 Assessing Magnitude of Impact for Heritage

Magnitude of Impact	Typical Criteria Descriptors
Substantial	Negative: Impacts will damage or destroy cultural heritage assets; result in the loss of the asset and/or quality and integrity; cause severe damage to key characteristic features or elements; almost complete loss of setting and/or context of the asset. The assets integrity or setting is almost wholly destroyed or is severely compromised, such that the resource can no longer be appreciated or understood. Positive: The proposals would remove or successfully mitigate existing damaging and discordant impacts on assets; allow for the restoration or enhancement of characteristic features; allow the substantial re-establishment of the integrity, understanding and setting for an area or group of features; halt rapid degradation and/or erosion of the heritage resource, safeguarding substantial elements of the heritage resource.
Moderate	Negative: Substantial impact on the asset, but only partially affecting the integrity; partial loss of, or damage to, key characteristics, features or elements; substantially intrusive into the setting and/or would adversely impact upon the context of the asset; loss of the asset for community appreciation. The assets integrity or setting is damaged but not destroyed so understanding and appreciation is compromised. Positive: Benefit to, or restoration of, key characteristics, features or elements; improvement of asset quality; degradation of the asset would be halted; the setting and/or context of the asset would be enhanced and understanding and appreciation is substantially improved; the asset would be bought into community use.
Slight	Negative: Some measurable change in assets quality or vulnerability; minor loss of or alteration to, one (or

Magnitude of Impact	Typical Criteria Descriptors
	maybe more) key characteristics, features or elements; change to the setting would not be overly intrusive or overly diminish the context; community use or understanding would be reduced. The assets integrity or setting is damaged but understanding and appreciation would only be diminished not compromised. Positive: Minor benefit to, or partial restoration of, one (maybe more) key characteristics, features or elements; some beneficial impact on asset or a stabilisation of negative impacts; slight improvements to the context or setting of the site; community use or understanding and appreciation would be enhanced.
Negligible / No Change	Negative: Very minor loss or detrimental alteration to one or more characteristics, features or elements. Minor changes to the setting or context of the site. No discernible change in baseline conditions. Positive: Very minor benefit to or positive addition of one or more characteristics, features or elements. Minor changes to the setting or context of the site No discernible change in baseline conditions.

The level of significance of the environmental effect will be determined by combining the impact risk with the sensitivity of the receptors which is commensurate with the standard WYG assessment. Any effect of intermediate adverse/beneficial and greater is defined as being significant.

Heritage Impact Assessment Methodology

No standard method of evaluation and assessment is provided for the assessment of significance of effects upon cultural heritage, therefore a set of evaluation and assessment criteria have been developed using a combination of the Secretary of State's criteria for Scheduling Monuments (Scheduled Monument Statement, Annex 1), Design Manual for Roads and Bridges, Volume 11, Part 3, Section 2, HA 208/07, Transport Analysis Guidance (TAG Unit 3.3.9, Heritage of Historic Resources Sub-Objective) and English Heritage Good Practice Advice in Planning Note 3: The Setting of Heritage Assets. Professional judgement is used in conjunction with these criteria to undertake the impact assessment.

Value

The table below provides guidance on the assessment of cultural heritage value on all archaeological sites and monuments, historic buildings, historic landscapes and other types of historical site such as battlefields, parks and gardens, not just those that are statutorily designated.

Value	Examples
Very High	World Heritage Sites, Scheduled Monuments of exceptional quality, or assets of acknowledged international importance or can contribute to international research objectives. Grade I Listed Buildings and built heritage of exceptional quality. Grade I Registered Parks and Gardens and historic landscapes and townscapes of international sensitivity, or extremely well preserved historic landscapes and townscapes with exceptional coherence, integrity, time-depth, or other critical

Value	Examples
	factor(s).
High	Scheduled Monuments, or assets of national quality and importance or that can contribute to national research objectives. Grade II* and Grade II Listed Buildings, Conservation Areas with very strong character and integrity, other built heritage that can be shown to have exceptional qualities in their fabric or historical association. Grade II* and II Registered Parks and Gardens, Registered Battlefields and historic landscapes and townscapes of outstanding interest, quality and importance, or well preserved and exhibiting considerable coherence, integrity time-depth or other critical factor(s).
Medium	Designated or undesignated assets of regional quality and importance that contribute to regional research objectives. Locally Listed Buildings, other Conservation Areas, historic buildings that can be shown to have good qualities in their fabric or historical association. Designated or undesignated special historic landscapes and townscapes with reasonable coherence, integrity, time-depth or other critical factor(s). Assets that form an important resource within the community, for educational or recreational purposes.
Low	Undesignated assets of local importance. Assets compromised by poor preservation and/or poor survival of contextual associations but with potential to contribute to local research objectives. Historic (unlisted) buildings of modest quality in their fabric or historical association. Historic landscapes and townscapes with limited sensitivity or whose sensitivity is limited by poor preservation, historic integrity and/or poor survival of contextual associations. Assets that form a resource within the community with occasional utilisation for educational or recreational purposes.
Negligible	Assets with very little or no surviving cultural heritage interest. Buildings of no architectural or historical note. Landscapes and townscapes that are badly fragmented and the contextual associations are severely compromised or have little or no historical interest.

Magnitude

The magnitude of the potential impact is assessed for each site or feature independently of its archaeological or historical value. Magnitude is determined by considering the predicted deviation from baseline conditions. The magnitude of impact categories are adapted from the Transport Assessment

Guidance (TAG Unit 3.3.9) and Design Manual for Roads and Bridges, Volume 11, Part 3, Section 2, HA 208/07.

Magnitude of Impact	Typical Criteria Descriptors
Substantial	Impacts will damage or destroy cultural heritage assets; result in the loss of the asset and/or quality and integrity; cause severe damage to key characteristic features or elements; almost complete loss of setting and/or context of the asset. The assets integrity or setting is almost wholly destroyed or is severely compromised, such that the resource can no longer be appreciated or understood. (Negative). The proposals would remove or successfully mitigate existing damaging and discordant impacts on assets; allow for the restoration or enhancement of characteristic features; allow the substantial re-establishment of the integrity, understanding and setting for an area or group of features; halt rapid degradation and/or erosion of the heritage resource, safeguarding substantial elements of the heritage resource. (Positive).
Moderate	Substantial impact on the asset, but only partially affecting the integrity; partial loss of, or damage to, key characteristics, features or elements; substantially intrusive into the setting and/or would adversely impact upon the context of the asset; loss of the asset for community appreciation. The assets integrity or setting is damaged but not destroyed so understanding and appreciation is compromised. (Negative). Benefit to, or restoration of, key characteristics, features or elements; improvement of asset quality; degradation of the asset would be halted; the setting and/or context of the asset would be enhanced and understanding and appreciation is substantially improved; the asset would be bought into community use. (Positive).
Slight	Some measurable change in assets quality or vulnerability; minor loss of or alteration to, one (or maybe more) key characteristics, features or elements; change to the setting would not be overly intrusive or overly diminish the context; community use or understanding would be reduced. The assets integrity or setting is damaged but understanding and appreciation would only be diminished not compromised. (Negative). Minor benefit to, or partial restoration of, one (maybe more) key characteristics, features or elements; some beneficial impact on asset or a stabilisation of negative impacts; slight improvements to the context or setting of the site; community use or understanding and appreciation would be enhanced. (Positive).
Negligible / No Change	Very minor loss or detrimental alteration to one or more characteristics, features or elements. Minor changes to the setting or context of the site. No discernible change in baseline conditions (Negative). Very minor benefit to or positive addition of one or more characteristics, features or

Magnitude of Impact	Typical Criteria Descriptors
	elements. Minor changes to the setting or context of the site No discernible change in baseline conditions. (Positive).

Magnitude (scale of change) is determined by considering the predicted deviation from baseline conditions. Quantifiable assessment of magnitude has been undertaken where possible. In cases where only qualitative assessment is possible, magnitude has been defined as fully as possible.

During the assessment any embedded mitigation has been considered in the impact assessment and this is clearly described in this section (cross referring the development description). Therefore, the magnitude of the impacts described herein will be stated before and after additional mitigation has been taken into consideration.

Impacts may be of the following nature and will be identified as such where relevant:

- Negative or Positive.
- Direct or indirect.
- Temporary or permanent.
- Short, medium or long term.
- Reversible or irreversible.
- Cumulative.

Significance

By combining the value of the cultural heritage resource with the predicted magnitude of impact, the significance of the effect can be determined. This is undertaken following the table below. The significance of effects can be beneficial or adverse.

Significance of Effects	Magnitude of Impact			
Cultural Heritage Value	**Substantial**	**Moderate**	**Slight**	**Negligible / no Change**
Very High	Major	Major – Intermediate	Intermediate	Minor
High	Major – Intermediate	Intermediate	Intermediate – Minor	Neutral
Medium	Intermediate	Intermediate - Minor	Minor	Neutral
Low	Intermediate – Minor	Minor	Minor – Neutral	Neutral
Negligible	Minor-Neutral	Minor-Neutral	Neutral	Neutral

Significance should always be qualified as in certain cases an effect of minor significance could be considered to be of great importance by local residents and deserves further consideration. The significance of effect is considered both before and after additional mitigation measures proposed have been taken into account.

For the purposes of this Heritage Statement, substantial negative impacts and major adverse effects are considered to amount to 'substantial harm' in National Planning Policy Framework (NPPF) terms. Moderate negative impacts and intermediate adverse effects are considered to amount to 'less than substantial harm' in NPPF terms. Slight negative impacts and minor adverse effects are considered to amount to minimal harm, while negligible negative impacts/no change and neutral effects are not considered to amount to any harm at all.

For the purposes of this Heritage Statement, negative impacts that are moderate in magnitude or greater and adverse effects that are intermediate in scale or greater indicate that the special architectural or historic interest of listed buildings or their settings and/or the character or appearance of conservation

areas would not be preserved in terms of section 16, 66 and 72 of the Planning (Listed Building and Conservation Areas) Act 1990.

Hydrology and Flooding

This method is a bespoke method developed by WYG which takes into consideration the Highways Agency's impact assessment guidance which can be found in the Design Manual for Roads and Bridges (DMRB), Volume 11 Environmental Assessment, Section 2, Part 5, HA205/08 Assessment And Management Of Environmental Effects Highways Agency (Highways Agency, 2008). Note that the DMRB assessment method is not followed in its entirety as DMRB assessments are developed for the assessment of highways projects and many of the impact criteria are developed around the results of highways specific assessment tools specific in DMRB.

Therefore, the assessment of the potentially significant environmental effects on the flood risk, drainage and surface water features of the environment will be based on the following set of sensitivity criteria provided in Table 6.1. Examples of how sensitivity may be determined for a particular feature are provided for transparency.

Table 6.1 Sensitivity of Flood Risk, Drainage and Surface Water Quality Attributes

Sensitivity	Criteria	Example Criteria
Very High	Attribute has a high quality and rarity on a regional or national scale	Water Framework Directive (WFD) Class 'High'. Site protected/designated under EC or UK habitat legislation (Special Area of Conservation (SAC), Special Protection Area (SPA), Site of Special Scientific Interest (SSSI), Drinking Water Protection Zone (DWPZ), Ramsar site, and Freshwater Fishery/Shellfish Water). Flood Zone 3b (Functional Floodplain) area at risk from a flood event less than or equal to the 1 in 20 year event EC Bathing Waters Directive Beach class – 'Higher' classification.
High	Attribute has a high quality and rarity on a local scale	Water Framework Directive (WFD) Class 'Good'. Main river >10m wide. Major Cyprinid Fishery (commercial). Watercourse that supports species protected under EC or UK habitat legislation but is not a designated site. Flood Zone 3a (High probability) area at high risk from a river flood event less than or equal to the 1 in 100 year event. EC Bathing Waters Directive Beach class – 'Minimum' classification.
Medium	Attribute has a medium quality and rarity on local scale	Water Framework Directive (WFD) Class 'Moderate'. Minor Cyprinid Fishery (commercial). Main river <10m wide. Ordinary watercourse >5m wide. Flood Zone 2 (Medium probability) area at medium risk from a river flood event between the 1 in 100 and 1 in 1000 year. event .
Low	Attribute has a low quality and rarity on local scale.	WFD Class 'Poor'. No fishery of any type. Unclassified field drain which is therefore likely to be <5m wide. Flood Zone 1 (Low probability) area at low risk from a river or sea flood event greater than the 1 in 100 year. EC Bathing Waters Directive Beach class– Fail.

Determination of the Magnitude of Flood Risk and Drainage Effects and their Significance

The magnitude of potential impacts during both construction and operation of the proposed development will be assessed using the criteria presented in Table 6.2. The magnitude (scale of change) is determined by considering the degree of deviation from the baseline conditions and whether this is likely to result in any changes in the use of the receptor concerned.

Table 6.2 Assessing the Impact Magnitude on Flood Risk and Drainage, Surface Water Quality and Water Demand

Impact magnitude	Example Criteria
Substantial negative	A pollution incident or release during construction or operation of a development likely to result in a major pollution incident. Substantial change (reduction) in the water body's existing failing physico chemical elements and the addition of new failing chemical elements resulting in a substantial change in current WFD physico chemical status. Therefore substantially increased pressure in meeting target status. A substantial adverse change in hydromorphological characteristics of the water feature which would affect the water body's existing WFD ecological status. Project conflicts with the delivery of more than one RBMP mitigation measures on a WFD water body. Loss or extensive change to a fishery. Building 'vulnerable development' in Flood Zone 3b on the site. Direct loss of Flood Zone 3b on site and indirect increase in flood risk elsewhere. Exceeds minimum current Building Regulations Standards for water use (legally non compliant).
Moderate negative	A pollution incident or release during construction or operation of a development likely to result in a moderate or minor pollution incident. Moderate change (reduction) in the water body's physico chemical elements resulting in a moderate change in current WFD physico chemical status. Therefore moderately increased pressure in meeting target status. A moderate change in hydromorphological characteristics of the water feature which would affect the water body's existing WFD ecological status. Project conflicts with the delivery of one RBMP mitigation measure on a WFD water body. Partial loss in productivity of a fishery. Building 'vulnerable development' in Flood Zone 3a on the site. Direct loss of Flood Zone 3a on site and indirect increase in flood risk elsewhere. Water demand during construction on most large construction projects is expected to be moderate negative. Meets minimum current Building Regulations Standards for water use.
Slight negative	Small reduction in water quality. Reduction in the water body's chemical elements but insufficient to change the current WFD chemical status. Therefore only slight increased pressure in meeting target WFD chemical status. A slight change in the hydromorphological characteristics but insufficient to change the current WFD ecological status. Building 'vulnerable development' in Flood Zone 2 on the site. Direct loss of Flood Zone 2 on site and indirect increase in flood risk elsewhere. Meets Code for Sustainable Homes Level 3 for water use. Water demand for non-residential buildings (BREEAM standard for non-residential buildings requirement) – water efficiency measures would help to achieve a Very Good rating (assuming 1 credit achieved for a water use between 4.5 and 5.5 m^3/per person/year). Water demand during construction on most small construction projects is expected to be slight negative.
Negligible	Very low levels of pollution from discharges insufficient to significantly affect water quality. Very low risk of pollution from accidental spillages. No discernible change in the water body's chemical elements. Therefore, no discernible change to WFD chemical status of waterbody. No discernible movement towards or away from the target WFD chemical status. No discernible cause and effect between the project and RBMP mitigation measures. No discernible loss of flood zone Meets Code for Sustainable Homes Level 4-6 for water use or similar (note: water neutrality results in no impact). Water demand for non-residential buildings (BREEAM standard for non-residential buildings requirement) –

Impact magnitude	Example Criteria
	water efficiency measures would help to achieve an Excellent rating (assuming 2 credits achieved for a water use between 1.5 and 4.4 m^3/per person/year).
Slight positive	Improvement in the water body's physico chemical elements but insufficient to change the current WFD chemical status. Therefore a slight improvement towards meeting target WFD chemical status. Direct net gain of Flood Zone 2 on site and indirect decrease in flood risk elsewhere.
Moderate positive	Moderate change (improvement) in the water body's physico chemical elements resulting in a moderate positive change in current WFD chemical statusA moderate positive change in hydromorphological characteristics of the water feature which would affect the water body's existing WFD ecological status. Therefore substantially decreased pressure in meeting WFD ecological target status as a result of the proposal (but this might not result in the water body's designation being removed from the Heavily Modified Waterbody category). Direct net gain of Flood Zone 3a on site and indirect decrease in flood risk elsewhere.
Substantial positive	Substantial change (improvement) in the water body's existing failing physico chemical elements. A substantial beneficial change in hydromorphological characteristics of the water feature which would affect the water body's existing WFD ecological status. Therefore substantially decreased pressure in meeting WFD ecological target status as a result of the proposal(s) (possibly resulting in the waterbody losing its 'Heavily Modified Waterbody' designation). Direct net gain of Flood Zone 3b on site and indirect decrease in flood risk elsewhere.

Determination of the Magnitude of Drainage Infrastructure Impacts and their Significance

Drainage infrastructure impact magnitude will be determined by applying a qualitative approach. This will follow the following steps:

- Reviewing the drainage proposals to ascertain if there will be any impact from the proposed design on existing drainage infrastructure and capacity during construction and operation.

For drainage infrastructure impacts the magnitude of the impact is described in descriptive words (not on a scale of magnitude) by stating whether the impact is either negative or positive or no impact. It is assumed that all negative and positive impacts result in significant effects.

Determining the Significance of Potential Effects and Significant Effects

Magnitude and sensitivity for flooding and drainage and surface water quality attributes is combined as shown in Table9.3 to determine the significance of the effects. This is similar to the significant effects table as provided specifically within Volume 11 Environmental Assessment, Section 3, Part 10, HD45/09 (Highways Agency, 2009), but terminology has been modified to maximise consistency of terminology used within this ES.

A level of significance of intermediate significance or greater is considered as being significant within the terms of reference of the EIA Regulations.

Table 6.3 Estimating the Significance of Potential Effects on Flood Risk and Drainage, Surface Water Quality and Water Demand

		Magnitude of Impact			
		Substantial magnitude	**Moderate magnitude**	**Slight magnitude**	**Negligible magnitude**
Sensitivity of Receptor	**Very High**	Major	Major	Intermediate	Neutral
	High	Major	Intermediate	Minor	Neutral
	Medium	Major	Intermediate	Minor	Neutral
	Low	Minor	Minor	Neutral	Neutral

Ecology

Once all of the updated surveys have been completed, an EcIA will be undertaken in accordance with the Chartered Institute of Ecology & Environmental Management's (CIEEM) Guidelines for EcIA in the UK (2nd ed, 2016).

This will involve the identification of the sensitive ecological receptors on site and an assessment of their nature conservation value. We will then determine the likely significant effects of the proposed scheme upon those receptors. Firstly we will assess the likely impacts of the scheme taking into account any design mitigation. This will then allow us to determine what mitigation and/or enhancement measures we consider are necessary to off-set any predicted significant impacts. The remaining residual impacts will then be presented (i.e. those arising after the implementation of mitigation) and it is these against which the scheme should be determined.

Ground Conditions

Environmental receptors can demonstrate different sensitivities to changes in their environment. It is also recognised that environmental impacts can operate over a range of geographical areas and therefore a geographical scale should be taken into account in the scale/magnitude of the impact, as well as the receptor. The sensitivity of the receptor also takes into account the long or short term exposure of the receptor.

For the purpose of this assessment sensitivity is determined as Very High, High, Medium and Low as detailed in Table 8.1 below.

Table 8.1 Methodology for Assessing Sensitivity of a Receptor

Sensitivity	Criteria	Example Criteria
Very High	Attribute has a high quality and/or rarity on a regional or national scale	Sites of Special Scientific Interest (SSSIs) with geological/geomorphological qualifying interest. Groundwater aquifers currently used, or likely to be suitable for use as, public potable supplies (e.g. Principal Aquifers, Source Protection Zone for a potable groundwater supplies). Groundwater that is providing baseflow to 'very good' WFD status quality surface waters. Soils with a very high likelihood of readily transmitting contaminants to nearby sensitive receptors or over a large distance (e.g. granular deposits in saturated zone or in continuity with river systems etc.). H1 soils as defined by the Environment Agency groundwater vulnerability classification system. Agricultural land use / soil quality (based on ALC Grades 1, 2 and 3a) (the 'best and most versatile'). Human population (e.g. local residents and site construction workers etc.).
High	Attribute has a high quality and/or rarity on local scale	Regionally Important Geological Sites (RIGS). Groundwater aquifers currently used for, or likely to be suitable for, providing non-potable supplies or limited domestic supplies (e.g. Secondary Aquifers for domestic supplies or industrial abstractions). Groundwater that is providing baseflow to 'good' WFD quality status surface waters. Soil sensitivity to pollution: soils with a moderately high potential to transmit contaminants to other receptors or over a significant distance (e.g. mixed cohesive and granular deposits of alluvium). H2/H3 soils as defined by the Environment Agency groundwater vulnerability classification system. Agricultural land use / soil quality of ALC Grade 3b (moderate).
Medium	Attribute has a medium quality and / or rarity on local scale	Groundwater that is unlikely to be suitable for providing abstractions (e.g. aquifers in areas of saline intrusion). Soils with an intermediate potential to transmit contaminants (e.g. Glacial Clays with occasional sand bands). Soils of intermediate (I1 or I2) leaching potential

Sensitivity	Criteria	Example Criteria
		as defined by the Environment Agency groundwater vulnerability classification system. Agricultural land use / soil quality of ALC Grade 4 (poor).
Low	Attribute has a low quality and/or rarity on local scale.	Non sensitive water resources (non classified, static groundwater). Soils with a low potential to transmit contaminants (e.g. competent clay). Soils of low (L) leaching potential as defined by the Environment Agency groundwater vulnerability classification system. Agricultural land use/soil quality of ALC Grade 5 (very poor) or less.

Impact Magnitude and Nature of Impacts

The magnitude of potential impacts during both construction and operation of the proposed development will be assessed using the criteria presented in Table 8.2. The magnitude (scale of change) is determined by considering the degree of deviation from the baseline conditions and whether this is likely to result in any exceedances of statutory objectives or changes in suitable uses of the receptor.

Table 8.2 Methodology for Assessing Magnitude of Impacts

Impact magnitude	Example Criteria[3]
Substantial negative	Change in soil quality or ground gas regime for a large area (>20ha) of land, sufficient to alter land use (e.g. remediation of 20ha of industrial land sufficient to enable mixed residential / commercial use) Permanent loss of any area of agricultural land (ALC Grades 1, 2 and 3a) Change in groundwater conditions sufficient to change aquifer use (e.g. contamination that prevents abstraction for potable supplies, or remediation of impacted aquifer sufficient to enable potable abstractions) Generation of large volumes of non-inert waste materials for disposal off-site to landfill.
Moderate negative	Change in soil quality or ground gas regime for a moderate area of land (<20ha) to a degree sufficient to alter land use in localised portions of the site or to a degree requiring a change in management / mitigation measures for site use. Change in groundwater conditions that may be sufficient to change local groundwater regime and potential aquifer uses (e.g. localised contaminant impact, localised change in groundwater levels).
Slight negative	Measurable but relatively small scale change in an area of contaminated land or ground gas regime, but insufficient to alter end land use. Change in groundwater conditions that are insufficient to change status or potential use of the water body. Permanent loss of any area of agricultural land (ALC Grades 3b, 4 or 5).
Negligible	No measurable contamination mobilised. No measurable change in area of agricultural land. No discernable change to groundwater regime.

[3] We assume that as a minimum waste will be managed in accordance with legislation and thus not fly tipped. We also assume that appropriate PPE is used when handling waste therefore no health risks.

Table 8.3 Methodology for Assessing the Significance of Impacts

		Magnitude of Impact			
		Substantial magnitude	**Moderate magnitude**	**Slight magnitude**	**Negligible magnitude**
Sensitivity of Receptor	**Very High**	Major	Major	Intermediate	Neutral
	High	Major	Intermediate	Minor	Neutral
	Medium	Major	Intermediate	Minor	Neutral
	Low	Minor	Minor	Neutral	Neutral

Any impacts of minor significance or lower are not considered to be significant and as such it will not be necessary to always propose mitigation methods. Impacts of intermediate - minor or higher significance will be deemed to be potentially significant and will require, where possible, mitigation methods to be adopted.

Contaminated Land Risks Assessment Methodology

By considering the sources, pathways and receptors, an assessment of the environmental risks is made with reference to the significance and degree of the risk. This assessment is based on the consideration of whether the source of contamination is likely to reach a receptor and hence whether it may cause an adverse impact.

The qualitative risk assessment has been undertaken in accordance with BS10175 and CIRIA Document C552: Contaminated Land Risk Assessment, A Guide to Good Practice. The source – pathway – receptor linkages are developed around the information presented above. Potential risks from on-site and off-site sources are considered in relation to the proposed redevelopment of the site to a residential with plant uptake end-use.

The risk assessment has been carried out by assessing the severity of the potential consequence, taking into account both the potential severity of the hazard, sensitivity of the target and probability of the hazard occurring, based on the categories detailed in Table 8.4.

Table 8.4 Categorisation of Risk

Category	Definition
Severe	Acute risks to human health, catastrophic damage to buildings/property, major pollution of controlled waters
Medium	Chronic risk to human health, pollution of sensitive controlled waters, significant effects on sensitive ecosystems or species, significant damage to buildings or structures
Mild	Pollution of non sensitive waters, minor damage to buildings or structures
Minor	Requirement for protective equipment during site works to mitigate health effects, damage to non sensitive ecosystems or species

The likelihood of an event (probability) takes into account both the presence of the hazard and target and the integrity of the pathway and has been assessed based on the categories given below.

Table 8.5 Categorisation of Probability

Category	Definition
High Likelihood	Pollutant linkage may be present, and risk is almost certain to occur in long term, or there is evidence of harm to the receptor
Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term
Low Likelihood	Pollutant linkage may be present, and there is a possibility of the risk occurring, although there is no certainty that it will do so
Unlikely	Pollutant linkage may be present, but the circumstances under which harm would occur are improbable

The potential severity of the risk and the probability of the risk occurring have been combined in accordance with the following matrix in order to give a level of risk for each potential hazard.

Table 8.6 Risk Matrix Categories

		Potential Severity			
		Severe	Medium	Mild	Minor
Probability of Risk	High Likelihood	Very High	High	Moderate	Low
	Likely	High	Moderate	Low	Low
	Low Likelihood	Moderate	Low	Low	Very Low
	Unlikely	Low	Low	Very Low	Very Low

Socio-economics methodology

Assessment Methodology

The assessment first establishes the baseline position in terms of local economic conditions and the current provision of education, health, leisure and community facilities, before examining the potential impacts of the proposed residential development and their significance. Opportunities for mitigation of any adverse effects and the enhancement of positive effects are then examined, including any built-in mitigation elements of the scheme, such as open space and social infrastructure facilities.

This assessment draws upon published Government and local authority statistics. In particular, data from the 2011 Census and other published national statistics have been used. At the local level, relevant data published by Broxbourne Borough Council has also been considered.

Sensitivity Receptors

Different socio-economic landscapes are affected in different ways depending upon the political and economic profile of the locality. This can be explored in differing ways and used to extrapolate the impact of any proposal. Impacts are defined by their degree of influence on certain receptors. Receptors include, but are not limited to, the overall population (including the total number of residents), working population, non-working population (those in education, retired or unemployed), skills of residents, indices of deprivation and the overall health of the economy.

The sensitivity of a receptor explores the challenges relating to the particular issue and are attributed weight according to their severity and relationship with national, regional and local norms. As an example a receptor relating to deprivation levels in an area of high unemployment and poor education compared to the national average would be considered to have very high sensitivity. A receptor with average levels of employment and education but poor ethnic diversity may be considered to have medium or low level sensitivity. Evidence and indicators of socio-economic sensitivity can be broken down as:

- Very high: Substantial evidence of direct socio-economic challenges relative to national and regional comparators and afforded high priority at national or regional level.
- High: Evidence of challenges linked to receptor which may be indirect. Regional disparity with national or local priority and policy level.
- Medium: Some evidence of socio-economic challenges. Disparity at local or regional level.
- Low: Little or no evidence of socio-economic challenges.

- Negligible: No evidence of challenges and/or no relation to the receptor.

Effect Magnitude

The magnitude of effects are those that will be caused or influenced by the development and are assessed in relation to the established baseline conditions. The impacts are assessed in relation to their magnitude and are additionally assessed after mitigation if necessary or relevant. The magnitude of effects may be positive (beneficial) or negative (adverse).

- Substantial: Large absolute and/or percentage change in socio economic indicators.
- Moderate: Noteworthy change.
- Slight: Measureable but not significantly influential change.
- Negligible: No determinable change.

Significance Criteria

The significance of effects combines the magnitude of change against the sensitivity of the receptor. Thus, as a simple example, the introduction of a large employment generating development in any area of high unemployment should have a substantial impact in area of high sensitivity and thus the significance of the effect would be major and beneficial.

The significance of effects is broken down into the matrix as indicated below:

Table 9: Significance of effects matrix

Magnitude of change	Sensitivity of receptor				
	Very High	High	Medium	Low	Negligible
Substantial	Major	Moderate	Moderate	Minor	Negligible
Moderate	Moderate	Moderate	Minor	Minor	Negligible
Slight	Minor	Minor	Minor	Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

It should be noted that the significance of effects criteria does not imply a value judgement on change per se. Thus, an increase in population may not be regarded as a negative socio-economic effect but could be subject to caveats relating to mitigation.

For the purposes of this assessment any impact moderate or above is considered to be significant.