



Appendix 3.2

EIA SCOPING REPORT (DECEMBER 2022)



Quod

EIA Scoping Report

Begbroke Innovation
District

December 2022

Q210810

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1 Introduction

Purpose

- 1.1 Oxford University Development Ltd. ('OUD'), a joint venture between the University of Oxford and Legal and General, are seeking to bring forward an outline planning application for the Begbroke Innovation District at the existing Begbroke Science Park and surrounding land. The development site extends to approximately 170 ha and is subsequently referred to as the 'Site', with Begbroke Science Park located within the central northern part of the Site.
- 1.2 OUD's vision is to transform the existing Begbroke Science Park and surrounding land into an Innovation District that is an internationally recognised location for innovation, research, education and entrepreneurship. This would be a mixed use development comprising research & development ('R&D') and flexible employments uses, industrial uses, commercial and professional services, storage uses, residential dwellings, retail, leisure and community uses, local community and centre uses, entertainment venues, supporting social and physical infrastructure, and new and enhanced landscape and wildlife areas including a new local nature reserve. The proposals are subsequently referred to as the 'Proposed Development'.
- 1.3 The purpose of the Scoping Report is to inform a request for an Environmental Impact Assessment ('EIA') Scoping Opinion from Cherwell District Council ('CDC') for the Proposed Development. The request for an EIA Scoping Opinion is submitted in accordance with Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017¹ (as amended)² ('EIA Regulations').
- 1.4 In line with the EIA Regulations, this report identifies the Site location, provides a brief description of the nature and purpose of the Proposed Development and an explanation of the likely significant effects of the Proposed Development on the environment. The report also outlines the proposed content, approach, and scope of the ES to be submitted with the planning application.
- 1.5 Figures 1.1 and 1.2 show the Site location and the likely extent of the planning application boundary. Brief descriptions of the Site and the Proposed Development are provided within Sections 2 and 3, respectively.

Figure 1.1: Site Location Plan

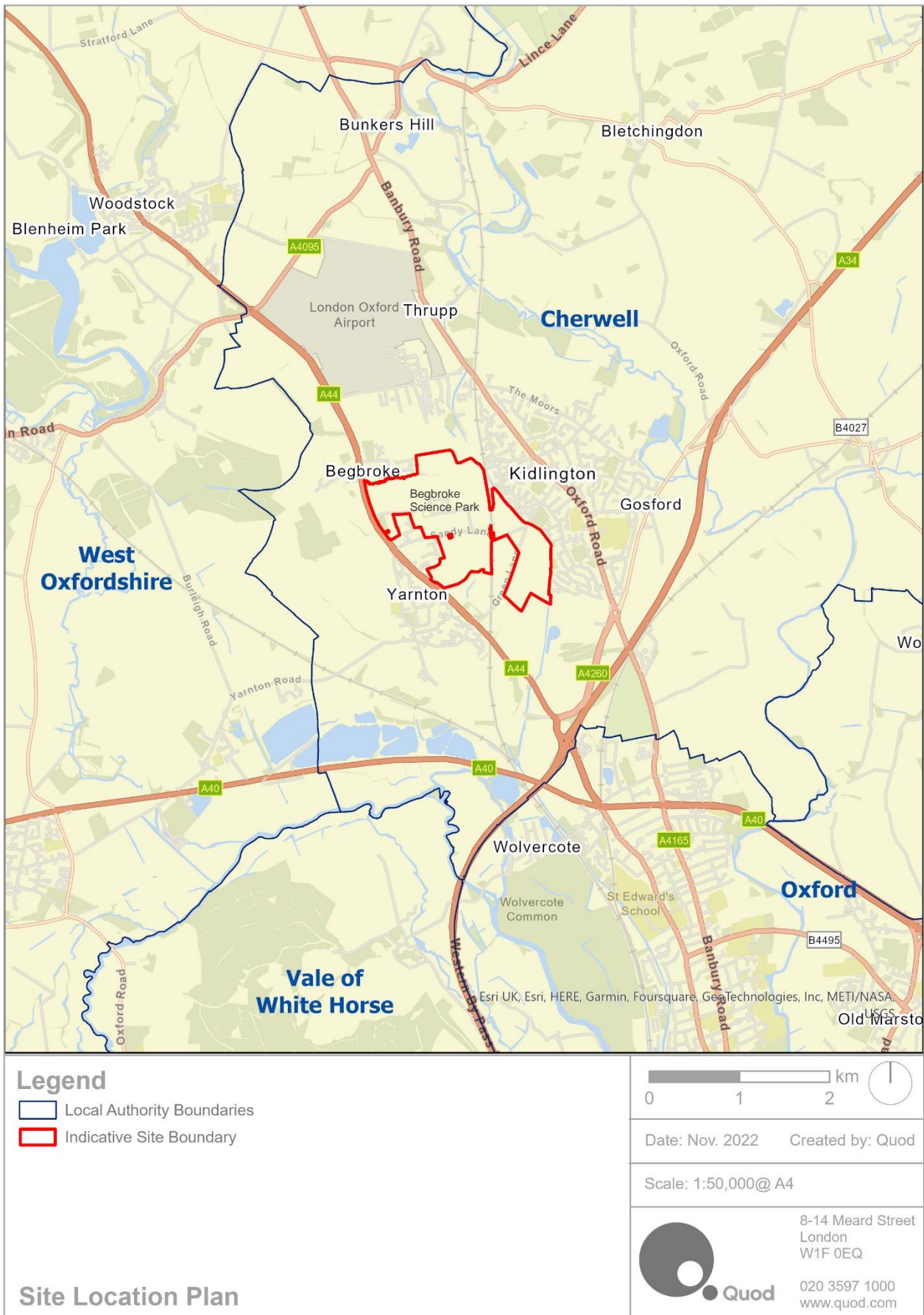
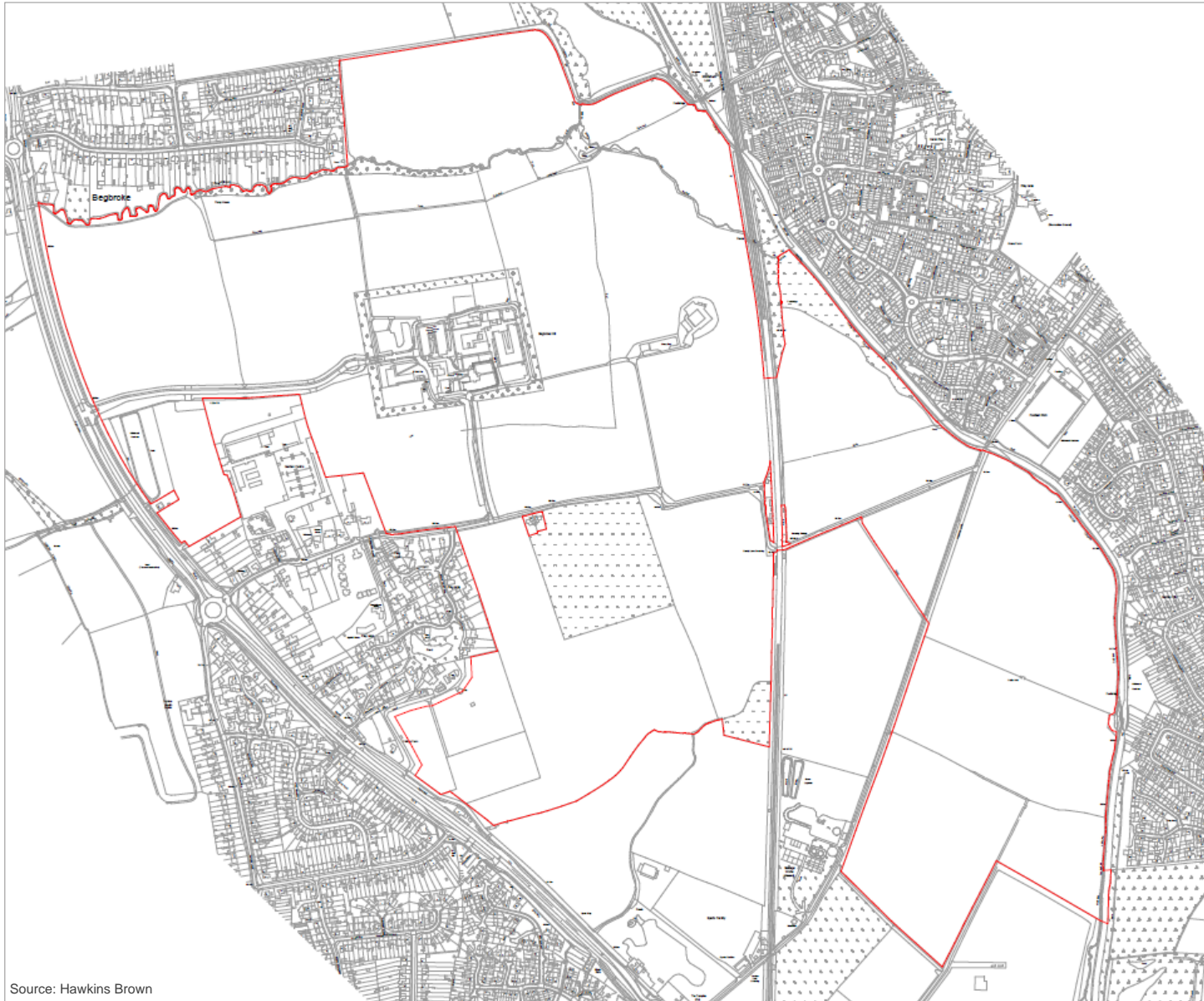


Figure 1.2: Indicative Planning Application Boundary



Planning and EIA Context

- 1.6 The Site is allocated for development under Policy PR8 in the Cherwell Local Plan 2011-2031 Part 1 Partial Review (adopted September 2020)³ ('Local Plan').
- 1.7 The Proposed Development falls within Category 10(b) 'urban development projects' of Schedule 2 of the EIA Regulations. Due to the nature and scale of the Proposed Development, it is Schedule 2 development as defined under the EIA Regulations and, as such, an Environmental Statement (ES) will accompany the outline planning application. EIA is a systematic process that aims to protect the environment by ensuring that a local planning authority, when deciding whether to grant planning permission for a project which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision making process. It also ensures that planning decisions are made with engagement from statutory bodies and other stakeholders including the public on the likely significant effects.

Project Team

- 1.8 In accordance with Regulation 18(5) of the EIA Regulations, the EIA will be undertaken by competent experts from the organisations listed in Table 1.1. These specialists have also contributed to the Scoping Report. Details of their relevant expertise and qualifications will be stated within the ES.

Table 1.1: Project Team

Role	Organisation
Developer/Applicant	Oxford University Development Ltd.
Architect	Hawkins Brown
Landscape Architect	Okra
Project Manager	Turner and Townsend
Planning Consultant EIA Co-ordinator	Quod

EIA Topic Leads

Water Resources and Flood Risk; Noise and Vibration; Air Quality; Climate Change and Greenhouse Gases	Buro Happold
Cultural Heritage	Oxford Archaeology
Biodiversity	BSG Ecology
Ground Conditions and Contamination	Hydrock

Agriculture, Land & Soil Resources	Askew Land and Soil
Landscape and Visual Impacts	LDA-Design
Transport and Access	KMC Transport Planning
Socio-economics	Quod

1.9 Quod will be the lead editor of the ES and author of non-technical chapters. Quod is a member of the Institute of Environmental Management and Assessment (IEMA) EIA Quality Mark Scheme, an accreditation scheme which sets high standards for EIA practice and demonstrates a commitment to excellence in EIA activities.

2 Site and Setting

Site Location and Extent

- 2.1 Figures 1.1 and 1.2 show the Site's location and likely extent of the planning application boundary. The Site comprises approximately 170 hectares (ha) of land located approximately 6.7km north west of Oxford City centre, approximately 625m west of Kidlington village centre and close to the villages of Yarnton and Begbroke.
- 2.2 The Site is within the administrative area of CDC, within the county of Oxfordshire. The Site is in close proximity to the boundaries of West Oxfordshire District Council; Vale of White Horse District Council; Oxford City Council and South Oxfordshire District Council.

Site Description and Land Uses

- 2.3 Begbroke Science Park, owned by the University of Oxford, is located within the central northern portion of the Site. Begbroke Science Park comprises of a number of one and two storey buildings which accommodate laboratories, engineering facilities and administrative buildings and includes the Grade II listed Begbroke Hill Farmhouse. Supporting the research facilities are surface car parking areas, service yards and bicycle storage racks.
- 2.4 The majority of the Site is currently in agricultural use for arable farming and includes a small number of farm buildings and access roads. A section of the agricultural land in the southeast of the Site is currently used as a poultry and deer farm. The agricultural land is divided into a number of interlinked fields, with hedgerow and tree-lined borders and a system of ponds and ditches that drains into nearby watercourses. The Cherwell Valley railway line passes through the Site on an approximate north-south alignment.
- 2.5 Sandy Lane crosses the Site on an approximate west-east alignment, joining the A44 (Woodstock Road) to the west of the Site and Yarnton Road to the east of the Site. To the south of Sandy Lane are two residential properties, 86 and 88 Sandy Lane, which lie outside the Site boundary. An additional residential property, Crossing Cottage, is located to the east of the Sandy Lane crossing, also outside the Site boundary. To the east of Sandy Lane, immediately west of the mainline railway lies a traveller's site, also outside the Site boundary.
- 2.6 A historic landfill site, known as Sandy Lane East, is located in the centre of the Site, south of Sandy Lane, approximately 250m south of Begbroke Science Park. The historic landfill site is approximately 5.2ha in area. The landfill historically received inert and industrial waste from unrecorded sources over an unspecified timeframe and is understood to be predominantly comprised of ash and other man-made materials.
- 2.7 The topography of the Site slopes moderately from north west to south east, towards the Oxford Canal. The highest elevation at 69m Above Ordnance Datum (AOD) in the north west of the Site, dipping to 60.5m in the south east of the Site.

2.8 The Site is bound by the following features:

- To the north and north east by Rowel Brook, which discharges into the Oxford Canal to the east of the Site, beyond which are residential dwellings off Fernhill Road;
- To the east by the Oxford Canal, beyond which is the village of Kidlington;
- To the south by Flit Solar Farm and agricultural land; and
- To the west by the A44, residential and commercial properties, including Yarnton Garden Centre, and allotments.

2.9 Figure 2.1 shows an aerial image of the Site.

Figure 2.1: Aerial Image of the Site



Legend Indicative Site Boundary	0 250 500 Meters
	Date: Nov. 2022 Created by: Quod
	Scale: 1:50,000@ A4
	8-14 Meard Street London W1F 0EQ 020 3597 1000 www.quod.com

Aerial Site Location Plan

Surrounding Context

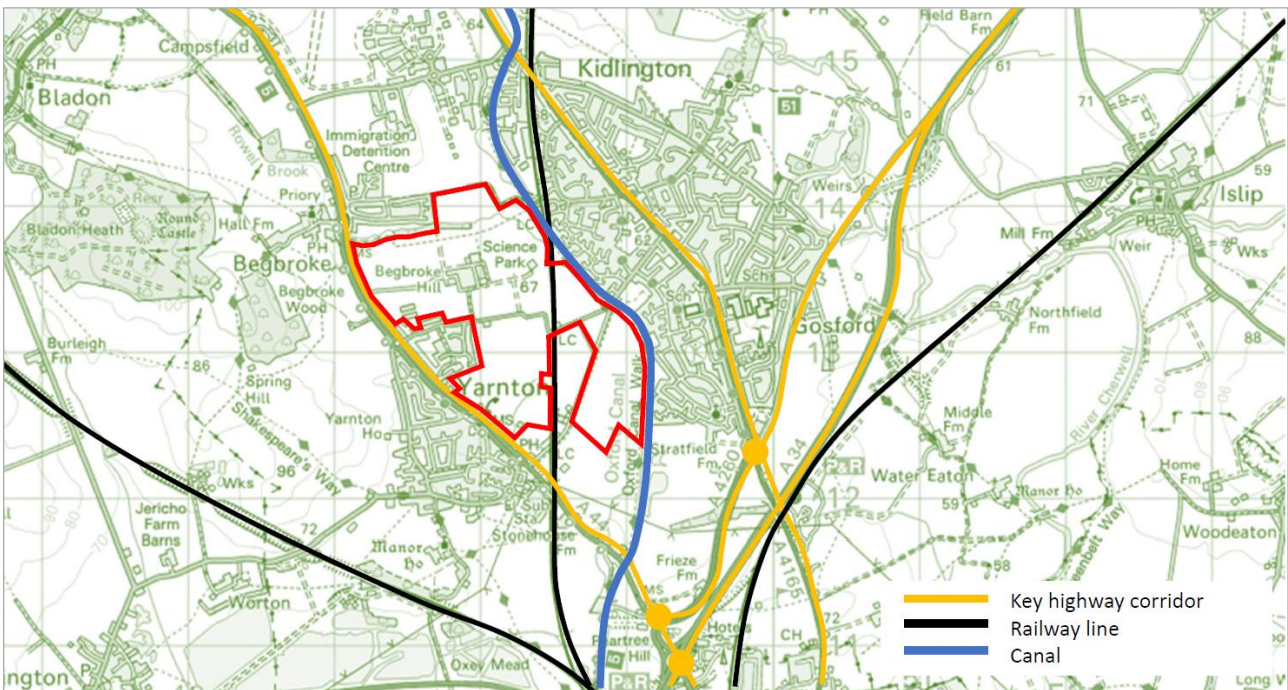
Land Uses

- 2.10 The village of Begbroke is located to the north and north west of the Site beyond Rowel Brook. Beyond the village of Begbroke to the north are three business parks which include a range of commercial and industrial uses: Station Field Industrial Estate (approximately 300m north of the Site), Chancery Gate Business Centre (approximately 740m north of the Site) and Oxford Motor Park (approximately 680m north of the Site). Oxford Airport is located to the north of the business parks, approximately 750m north of the Site boundary. Oxford Airport provides private and business aviation services and is home to a number of flight schools.
- 2.11 Rushy Meadows Site of Special Scientific Interest ('SSSI') is located adjacent to the north east boundary of the Site.
- 2.12 A fuel station, operated by Shell, is located adjacent to the western boundary of the Site.
- 2.13 To the west of the Site, beyond the A44, is a large expanse of agricultural land which is allocated for residential development under Policy PR9 of the Local Plan.
- 2.14 Residential areas associated with the village of Kidlington are located adjacent to the Oxford Canal which forms the eastern boundary of the majority of the Site. Kidlington village centre is located approximately 530m west of the Site boundary and the closest residential properties to the Site are approximately 30m west of the Site boundary, beyond of the Oxford Canal.
- 2.15 Residential areas associated with the village of Yarnton are located to the south and west of the Site. Yarnton village centre is located approximately 660m south west of the Site and the closest residential properties to the Site are adjacent to the western boundary of the Site. The urban fringes of the City of Oxford, including residential uses, are approximately 2.7km to the south of the Site, beyond the A34.
- 2.16 Areas to the north, west and south of the Site comprise agricultural land and are designated as Green Belt land in the Local Plan.

Transport and Access

- 2.17 The strategic road network around the Site comprises some major highways, including the A44, A34 and A4260. The Oxford Canal also bounds the Site to the east and there are a number of railway lines on and in the vicinity of the Site. This is illustrated in Figure 2.2.

Figure 2.2: Transport Constraints⁴



2.18 Vehicular and pedestrian access to the Site is gained via Begbroke Hill, Sandy Lane and Kidlington Lane. Begbroke Hill provides access from the A44 in the west to the Begbroke Science Park. Sandy Lane crosses the Site in a west-east alignment. Kidlington Lane crosses the south of the Site in a north east–south west alignment and connects with Green Lane which connects to the A44, circa 500m to the south of the Site.

2.19 The closest bus stop to the Site is located on Sandy Lane approximately 180m west and approximately a two minute walk from the Site boundary. The bus stop is served by the number 9 bus which runs between Middle Barton and Kidlington. Additional bus stops are located on the A44 northbound and southbound, approximately 420m and 365m west of the Site boundary respectively, and approximately a 10 minute walk from the Site boundary. The bus stops are served by the by NS3 gold and S3 gold buses, which run between Oxford and Chipping Norton.

2.20 The railway running through the Site constitutes a physical barrier through the Site. Two crossings currently make vehicular access from Kidlington possible, one at the north and one at the centre of the Site along Sandy Lane.

2.21 Oxford Parkway Railway Station is located approximately 1km south east of the Site boundary (approximately 30-minute walking distance). Oxford Parkway Railway Station is served by Chiltern Railways services between London Marylebone and Oxford.

2.22 A number of Public Rights of Way (PRoW) cross the Site:

- Adjoining ProWs 124/7/10, 124/7/30, 124/7/20, 420/19/10 and 265/22/10 cross the north of the Site on a west-east alignment, connecting the A44 to the Oxford Canal;
- Adjoining ProWs 265/33/10, 265/33/20, 2653/33/30, 265/33/40, 265/33/50 and 265/33/60 along the eastern Site boundary;

- ProW 124/8/10 which connects ProW 124/7/30 to the eastern and southern boundaries of the Begbroke Science Park, with connection to ProW 420/3/10;
- ProW 420/3/10 from Begbroke Science Park to Sandy Lane; and
- ProW 420/4/10 along the south eastern edge of Kidlington Lane.

Environmental Sensitivities

2.23 Figure 2.3 identifies the key environmental sensitivities within and in close proximity to the Site.

2.24 The Site is not located within a 'sensitive area' (as defined in Regulations 2 of the EIA Regulations) (i.e. a SSSI, National Park, Area of Outstanding Natural Beauty (AONB), World Heritage Site (WHS), Scheduled Monument or National Site Network Site) and is not subject to any statutory or non-statutory designations for nature conservation. The Grade II listed Begbroke Hill Farmhouse is situated within Begbroke Science Park but there are no other heritage designations on the Site.

2.25 There are no Scheduled Monuments, Registered Parks and Gardens or Registered Battlefields within the Site or within 500m of the Site boundary. Yarnton Manor Grade II listed Registered Park and Garden is located approximately 900m south of the Site. The Blenheim Palace WHS and Grade I Registered Park and Garden is located approximately 3km north west of the Site boundary. The edge of the Cotswolds AONB is located approximately 3.5km north west of the Site.

2.26 Two Grade II bridges and Kidlington Green Lock, associated with Oxford Canal, are located adjacent to the eastern Site boundary with Grade II Tudor Cottage adjacent to the western Site boundary on the A44. There are over 100 listed buildings within 2km of the Site, notably the Grade I listed Church of St Bartholomew and Church of St Mary, approx. 950m south and 6km north east of the Site respectively. The Site is not located within a Conservation Area (CA), but there are 13 CAs within 3km of the Site, with the closest being Oxford Canal CA, located on the eastern Site boundary.

2.27 There are no statutory or non-statutory designations for nature conservation within the Site boundary. Rushy Meadows SSSI is adjacent to the north east of the Site and there are a number of other SSSIs within 10km of the Site. Oxford Meadows Special Area of Conservation (SAC) and Pixey and Yarnton Meads SSSI located approximately 1.8km south of the Site. There are no Local Nature Reserves (LNR) within 5km of the Site. There is one non-statutory designated site within the Site boundary, the Lower Cherwell Valley Conservation Target Area (CTA), which extends into the north-eastern corner of the Site. In addition, there are 17 other non-statutory designated sites within a 2 km radius of the Site.

2.28 There is no ancient woodland within the Site. The ancient woodlands of Begbroke Wood, Blandon Heath and Worton Heath are located approximately 660m west, 900m west and 1.1km west of the Site respectively. A Group Tree Preservation Order (TPO) is located in the north western corner of the Site.

2.29 Based on the Environment Agency (EA) flood maps, the Site is shown to be predominantly located within Flood Zone 1 (0.1% chance (low probability) of annual flooding). Areas within the east of the Site are located within Flood Zone 2 (between 0.1 – 1% chance (medium

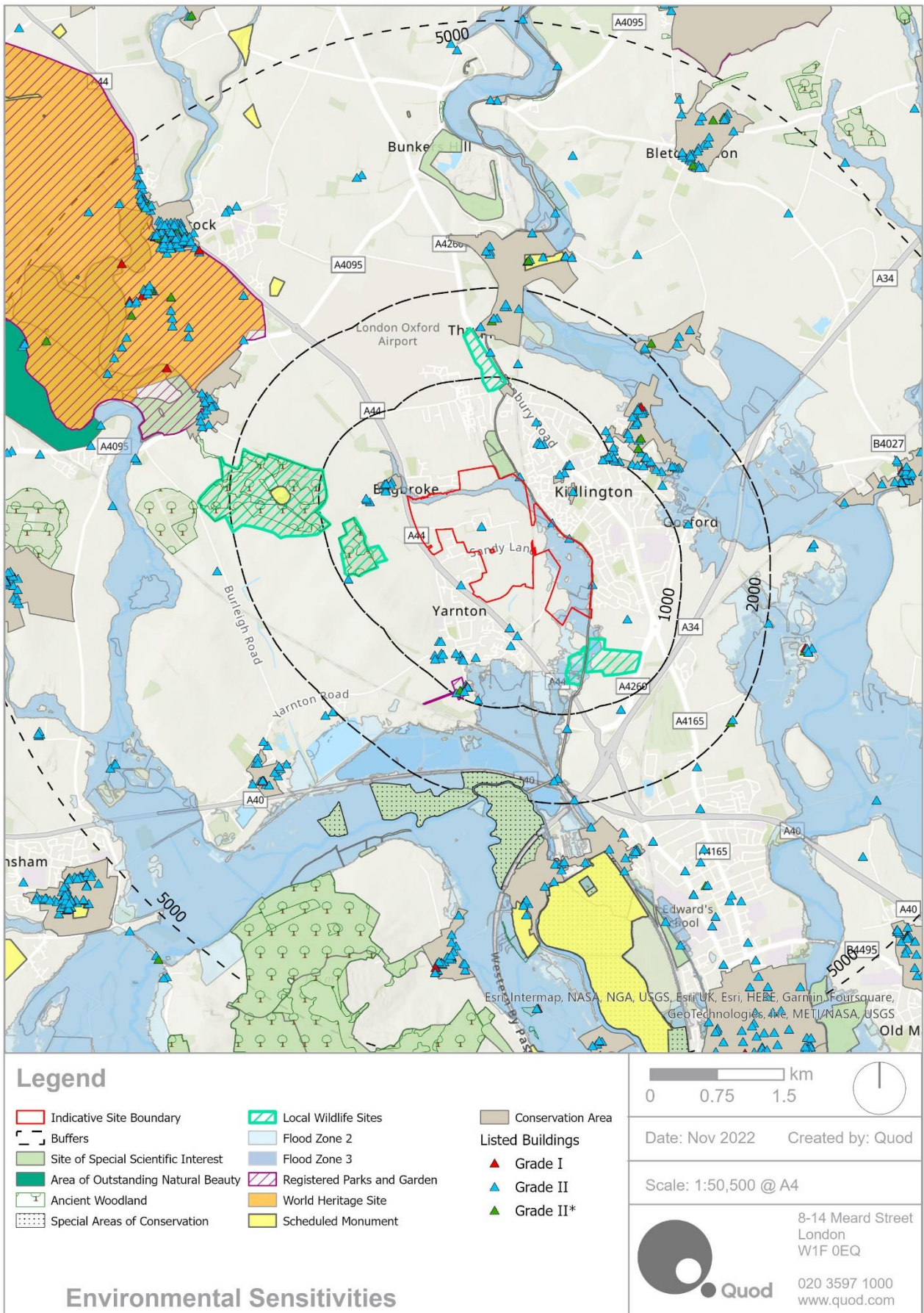
probability) of flooding) and Flood Zone 3 (greater than 1% chance (high probability) of annual flooding).

- 2.30 The Site is not located within an Air Quality Management Area (AQMA). The closest AQMAs to the Site are the CDC AQMA No.3 (Kidlington) and City of Oxford AQMA approximately 1.5km east and 1.5km south of the Site respectively.

Current and Future Development

- 2.31 Part of the Site is subject to two extant planning permissions which are expected to be delivered by 2025. The first relates to an outline planning permission, which was granted in May 2018 (Ref: 18/00803/OUT, as amended) for up to 12,500 square metres (sqm) of employment (B1a/b/c Use) and ancillary (D1 Use) floorspace, retention of and improvements to the existing vehicular, public transport, pedestrian and cycle access; car parking; hard and soft landscape works; and associated drainage, infrastructure and earthworks. Related to this, a Reserved Matters approval (Ref: 21/03150/REM) was granted in January 2022 relating to one academic and one commercial research building totalling 12,500 sqm (of B1 a/b/c and ancillary D1 floorspace). Construction of this approved development has begun and is assumed for the purposes of the EIA process to be complete and operational by 2025. A separate full planning permission (Ref: 21/03195/F) was granted in February 2022 to replace existing temporary parking zones with a permanent surface level car parking area providing 253 spaces (incl. 4 accessible Blue Badge holder bays and 63 Electric Vehicle charging points). It is expected that construction of this development will commence in 2023 and that it would be complete by 2025.
- 2.32 Network Rail are developing detailed proposals to close two of the three level crossings. It is proposed that the Yarnton Lane level crossing is to be replaced with a pedestrian/cycle bridge and the Sandy Lane level crossing is to be replaced with a bridge for sustainable transport. These proposals will be subject to separate a separate planning application to be submitted in Spring 2023 by Network Rail.
- 2.33 Hallam Land Management Ltd. ('HLM') are preparing proposals for housing development on land immediately south of the Site which forms part of the PR8 site allocation in the Local Plan. To date, HLM have submitted an EIA Scoping Opinion request (Ref: 21/00758/SCOP) in March 2021 which sets out that the proposals will comprise up to 300 new homes. A Scoping Opinion was issued by CDC in July 2021.
- 2.34 Further information on current and future developments in the area that will be considered in the EIA as part of the cumulative effects assessment are provided in Section 16 and Appendix A.

Figure 2.3: Environmental Sensitivities



3 Description of the Proposed Development

The Proposed Development

- 3.1 The Proposed Development is at an early stage of design and will continue to evolve in response to technical analysis as part of the EIA process and consultation with the public, CDC and other stakeholders.
- 3.2 The description of development for the purposes of the planning application has not been finalised, however it is likely to include the following elements:
- The potential demolition of some buildings within the Begbroke Science Park.
 - A minimum of 1,750 dwellings (within Use Classes C3, C4 and Sui Generis);
 - Supporting social infrastructure including secondary school/primary school(s) (Use Class F1); health, indoor sport and recreation, emergency and nursery facilities (Class E(d)-(f));
 - Supporting retail, leisure and community uses, including retail (Class E(a)), cafes and restaurants (Class E(b)), commercial and professional services (Class E(c)), local community uses (Class F2), and other local centre uses within a Sui Generis use including public houses, bars and drinking establishments (including with expanded food provision), hot food takeaways, venues for live music performance, theatre, and cinema.
 - Provision of facilities for formal sports and play areas;
 - Remediation of historic landfill site comprising 'cap and cover' works and creation of new public open space;
 - Landscape and public realm, including areas for sustainable urban drainage systems, allotments, biodiversity areas, outdoor play and sports facilities (Use Class F2(c));
 - Flexible employment uses including research and development, office and workspace and associated uses (Use E(g)), industrial (Use Class B2) and storage (Use Class B8) including within the existing Begbroke Science Park and an expansion to accommodate a further 14.7 hectares within the Site.
 - Highway works, including a new vehicular, cyclist and pedestrian roads and paths, improvements to the existing Sandy Lane and Begbroke Hill road, a bridge over the Oxford Canal, safeguarded land for a rail halt, and car and cycle parking with associated electric vehicle charging infrastructure; and
 - Utility, water and waste water facilities and infrastructure;
 - Together with enabling and associated works, including temporary meanwhile uses.
- 3.3 Building height parameters are still being defined, but are expected to range between two and four storeys. In suitable locations, the Proposed Development may reach heights of up to circa five/six storeys subject to further technical analysis and review.
- 3.4 Embedded mitigation measures will be incorporated and designed into the Proposed Development to address the potential effects on the surrounding land uses. Technical design

workshops are currently being undertaken as part of the EIA process to ensure that embedded mitigation measures are incorporated into the design.

- 3.5 The existing network of PRowS will be retained where possible and incorporated into the Proposed Development (with some potential diversions to negotiate the new features on-site) maintaining connectivity across the Site. New footpath and cycleway links will be introduced to enhance the connectivity within the wider area and provide an enhanced active travel resource to the local communities.
- 3.6 Landscaping and ecological enhancement will be implemented to achieve a minimum of 10% biodiversity net gain ('BNG') on-site, in-line with policy requirements, with a target to achieve 20% BNG. This will include the restoration of habitat connectivity within the landscape proposals by linking habitats which are currently isolated, particularly woodlands, hedgerows and grasslands. The Proposed Development will create new habitats of high ecological value including ponds, species-rich grasslands, woodlands, orchards, native scrub and species-rich hedgerows. A new Local Nature Reserve of circa 30 ha in extent will be created in the north of the Site, along with a nature conservation area (circa 11 ha) and canalside park (circa 20 ha).
- 3.7 The Proposed Development is also likely to include engineering works to achieve proposed site levels. This will involve cut and fill to achieve appropriate levels for the new built development. Excess cut will be used on-site for landscape features.
- 3.8 An illustrative depiction of the emerging scheme proposals ('Illustrative Scheme') is provided in Figure 3.1.

Figure 3.1: Illustrative Masterplan Layout



Construction

- 3.9 Construction phasing and programme assumptions are uncertain at this stage, although it is expected that the Proposed Development would be built out over a period of approximately 8 years, although this could be subject to change.
- 3.10 Subject to the grant of planning permission, it is anticipated that construction of the Proposed Development could commence in or around 2025, with construction expected to be complete in or around 2033. Construction of the Proposed Development would be phased and therefore some components would be occupied and operational during the construction phase.
- 3.11 For the purposes of assessing the likely significant effects of construction traffic, peak traffic estimates will be based on a worst-case construction programme to ensure the construction traffic effects are assessed on a worst case scenario basis.
- 3.12 OUD has committed to undertaking construction works in line with a Construction Environmental Management Plan ('CEMP') as a means of avoiding, reducing or mitigating

potential adverse effects of construction on the environment and local community. A Framework CEMP will be prepared to accompany the ES at the outline planning application stage in line with relevant CDC policy and guidance, and relevant mitigation measures identified within the ES. Detailed CEMP(s) will be prepared once contractors are appointed and are expected to be subject to approval by CDC via an appropriately worded planning condition.

- 3.13 The Transport Assessment will include a draft Construction Traffic Management Plan ('CTMP') which will include an indication of construction vehicle routing, access and egress. The draft CTMP will also include proposed measures that will be adopted to reduce the potential impacts of construction vehicles on other road users.

Application and Basis of EIA

- 3.14 The planning application for the proposals will be submitted in outline with all matters reserved for future determination except for the principal means of access to the Site. Detailed designs for the buildings, their scale, layout and appearance will, therefore, be subject to future reserved matters applications which will be submitted to CDC for approval.
- 3.15 Parameter Plan(s) will accompany the planning application which will set out the development zones, maximum building heights, principles of the landscape strategy and primary access arrangements for the Proposed Development. These will inform the EIA and will establish the limits of the Proposed Development.
- 3.16 A Development Specification document and Strategic Design Guide will also accompany the planning application. The primary purpose of the Development Specification will be to define the form and content of the Proposed Development including built-in environmental mitigation and enhancement measures. The parameter plan(s), Development Specification and Strategic Design Guide will form the primary 'control documents' which will establish the framework for future detailed reserved matters applications and therefore the basis of the EIA.
- 3.17 It is considered that the above set of 'control documents' will provide a sufficient level of detail to allow the likely significant effects of the Proposed Development to be robustly identified and assessed, thus satisfying the EIA requirements relating to outline planning applications.

4 EIA Methodology

Introduction

- 4.1 The ES will be prepared in compliance with the EIA Regulations. Reference will also be made to current EIA good practice guidance. This section outlines the general approach to the EIA process.

Consultation and Scoping Opinion

- 4.2 A programme of consultation with key stakeholders will be undertaken with statutory and non-statutory consultees throughout the Proposed Development design process and in the lead up to the submission of the outline planning application. Key stakeholders include:

- CDC (Planning, Environmental Health, Contaminated Land and Landscape);
- OCC (Highways and Transportation, Ecology, Heritage, Flood Risk and Drainage, and Waste);
- Local Parish Councils;
- Environment Agency;
- Civil Aviation Authority;
- National Highways;
- Network Rail;
- Historic England;
- Natural England;
- Department for Environment, Food & Rural Affairs;
- Canal and Rivers Trust; and
- Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust.

- 4.3 In line with Regulation 18(4) of the EIA Regulations, the ES will be ‘based on’ the latest Scoping Opinion provided by CDC. Each ES topic chapter will set out key points made during scoping correspondence between the project team and stakeholders and will explain how these have been addressed by the EIA process.

- 4.4 Public consultation will be undertaken during the masterplan and preparation of the planning of the outline application. The feedback received through these public consultation activities will be detailed in a Statement of Community Engagement that will accompany the outline planning application.

Alternatives

- 4.5 In accordance with Regulation 18(3)(d) of the EIA Regulations, the ES will provide “*a description of the reasonable alternatives.... relevant to the proposed project and its specific*”

characteristics which have been considered by the Applicant and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects”.

- 4.6 The ES will describe the reasonable alternatives which are relevant to the Proposed Development which have been considered by the Applicant. For example, alternative development land uses and areas, layouts, heights, landscaping, access and treatment of the historic landfill.
- 4.7 The Site is allocated for development within the Cherwell Local Plan under Policy PR8 as a site for a new urban neighbourhood. Alternative sites are therefore not considered to be a reasonable alternative by the Applicant and as such will not be considered in the ES.

EIA Methodology

Significant Effects and Scope of the EIA

- 4.8 As highlighted by the UK Government Online Planning Practice Guidance⁵ (PPG), where considering the scope of EIAs, local planning authorities *“should limit the scope of the assessment to those aspects of the environment that are likely to be significantly affected”*.
- 4.9 With respect to identifying the likely significant environmental effects associated with the Proposed Development, consideration is given to potential environmental effects associated with the construction phase and completed and operational Proposed Development. These effects could be both beneficial and adverse and deemed to be ‘significant’ on the basis of:
- The value / importance of the resources and receptors that could be affected;
 - The predicted magnitude of environmental change and / or impact experienced by these resources and receptors, accounting for their size, duration and spatial extent;
 - The susceptibility or sensitivity of resources / receptors; and,
 - Options for avoiding, reducing, offsetting or compensating for any potentially significant adverse effects and the likely effectiveness of such mitigation measures.
- 4.10 The proposed scope of the EIA is based on the professional judgement of the EIA project team (defined at Table 1.1) and has been informed through desktop study, baseline surveys and a review of the emerging Proposed Development. In addition, environmental information associated with the previous planning applications on the Site has been reviewed to support any conclusions reached, where applicable.
- 4.11 Sections 5 to 15 of this Scoping Report set out those aspects of the environment that could be likely to be significantly affected by the Proposed Development and as such will be ‘scoped into’ the ES. Potential effects deemed to be non-significant within environmental topics are also set out within these sections. Section 17 sets out those aspects of the environment that are considered unlikely to be significant affected and therefore are proposed be scoped out of the ES.

Scoping Summary

- 4.12 This scoping exercise has been informed by desk-based research, site-surveys, professional judgement and other information available for the Site. Table 4.1 provides a summary of the

scoping exercise. A tick indicates where a topic or environmental aspect is proposed to be scoped into the ES.

Table 4.1: EIA Scoping Summary

Technical Topics	Construction Effects	Completed Proposed Development Effects	Comments
Socio-Economics	✓ - T	✓ - P	ES Chapters to be prepared
Cultural Heritage	✓ - T/P	✓ - P	
Transport and Access	✓ - T	✓ - P	
Noise and Vibration	✓ - T	✓ - P	
Air Quality	✓ - T	✓ - P	
Climate Change and Greenhouse Gases	✓ - P	✓ - P	
Biodiversity	✓ - T/P	✓ - P	
Agricultural Land and Soil Resources	✓ - P	X	
Ground Conditions and Contamination	✓ - T/P	✓ - P	
Water Resources and Flood Risk	✓ - T/P	✓ - P	
Landscape and Visual	✓ - T	✓ - P	
Light Pollution	x	x	Topics scoped out of the ES
Wind Microclimate	x	x	
Waste and Materials	x	x	
Vulnerability to Major Accidents and Disasters	x	x	
Human Health	x	x	
Energy and Sustainability	x	x	
Utilities	x	x	
Daylight, Sunlight, Overshadowing and Solar Glare	x	x	
Telecommunications	x	x	
Aviation	x	x	
Electromagnetic Fields	x	x	

Key: ✓ Likely Significant Effect / x No Likely Significant Effect. T – Temporary Effect / P – Permanent Effect

Study Area

- 4.13 The study area for each topic will be based on the geographical scope of the potential for likely significant effects relevant to the topic or the information required to assess the likely effects, as well as topic-specific guidance and consultation with stakeholders. Further detail is provided in the technical sections (Sections 5 to 15).

Baseline and Future Baseline Conditions

- 4.14 Baseline environmental conditions need to be established to enable an accurate assessment of potential changes to such conditions that may occur and to assess the likely significant environmental effects of the Proposed Development. Understanding baseline conditions is also important for the identification of the most appropriate mitigation which could be employed to avoid or reduce any likely significant adverse environmental effects.
- 4.15 It is proposed that the baseline conditions will be taken as the current conditions on the Site at the time of submission of the outline planning application. Baseline information is already being gathered through desk-based research and Site surveys in 2022/23 to define and describe the existing environmental characteristics and receptors for the topics to be included in the ES. Where environmental information and data is not available for 2022/23, it may be necessary to use data which pre-dates 2022. The ES will set out what year the baseline data is sourced from for each topic.
- 4.16 In addition to the current baseline conditions, the ES will include a description of the likely evolution of the baseline without implementation of the Proposed Development. This is known as the 'future baseline'.
- 4.17 As set out at paragraph 2.30, extant permissions are in place at Begbroke Science Park for up to 12,500m² new floorspace and a new surface car park, assumed to be operational prior to completion of the Proposed Development. As such, this scheme will be considered as part of the future baseline.

Construction Assessment

- 4.18 An indicative construction programme for the Proposed Development will be presented in the ES. This will include all aspects of the construction phase including site preparation, construction, fit-out and landscaping works.
- 4.19 The ES will outline the main activities associated with the construction works, together with the likely duration of each activity. Topics which have identified likely significant effects from construction activities are outlined in the following sections. The Applicant has committed to implementation of a CEMP(s), which will be subject to approval by CDC and secured through an appropriately worded planning condition. Mitigation measures will be included in a Framework CEMP which will form an appendix to the ES and be submitted with the outline planning application. The Framework CEMP will set out measures to avoid, reduce or mitigate potential construction-related adverse environmental effects.
- 4.20 In line with Institute of Environmental Management and Assessment ('IEMA') best practice⁶, CEMPs (and the Framework CEMP) can be defined as 'tertiary' mitigation which is defined as that which *"will be required regardless of any EIA assessment, as it is imposed, for example,*

as a result of legislative requirements and/or standard sectoral practices. For example, considerate contractor practices that manage activities which have potential nuisance effects". As such, a CEMP is considered to be standard practice in the management of the construction works of the Proposed Development. The Framework CEMP will be taken into account and form the basis of the assessment of the construction-related likely significant environmental effects in the ES. As such, any likely significant environmental effects that might have arisen without this tertiary mitigation will not be identified as 'likely effects', as there should be no potential for them to arise. This should result in a simpler and more proportionate ES in line with the PPG⁷.

- 4.21 The assessment of construction effects will be based on an assumed 'peak year' of construction activity as a reasonable worst case scenario, when volumes of construction vehicles and on-site activities are likely to be at their highest.
- 4.22 The ES will set out the assumed notional 'likely-worst case' scenario with respect to the envisaged construction methods, location (proximity to sensitive receptors) and timing/duration of activities. This information will be used by each technical chapter so that each assessment accounts for the worst-case scenario for any given set of receptors relevant to that particular assessment.
- 4.23 Sensitive uses, such as residential uses, will be occupied when construction work is ongoing. As such, they would be considered as future sensitive receptors within the Site where relevant to the assessment.

Completed Development Assessment

- 4.24 The likely significant effects of the completed Proposed Development will be assessed for each environmental topic. For the purposes of certain assessments, an assumption will be made on the likely year that the Development will be fully complete and occupied.
- 4.25 The assessment of the completed Proposed Development will be based on the Parameter Plans, Development Specification, and Strategic Design Guide.
- 4.26 The potential assessment scenarios which will be linked to a future year assumption are likely to includeⁱ:
- Peak Construction Year (Year 2028) (peak construction activities + some operational activities on-site);
 - Future Baseline Without Proposed Development (2033); and
 - Fully Completed Proposed Development (2033).
- 4.27 These may be revised once the construction programme and sequencing is better understood.

Cumulative Effects Assessment

ⁱ The transport assessment (see section 7 of this report) is an exception and will assess additional assessment scenarios.

4.28 The potential for cumulative effects to arise will be considered in each technical chapter for construction and once the Proposed Development is completed and operational. Further details including the cumulative development projects are provided in Section 15 and Appendix A.

Determining the Likely Significance of Effects

4.29 Determining the likely significance of environmental effects is intended to inform CDC's decision making. The likely significance of effects will be determined by specialists with reference to generic assessment criteria or subject-specific criteria for each environmental topic being considered. These criteria will apply a common terminology, classifying whether the effects are major, moderate or minor, as well as, adverse, negligible or beneficial, temporary or permanent, in line with standard practice.

Structure of the ES Technical Chapters

4.30 Each environmental topic scoped into the EIA will be structured as set out in Appendix B.

5 Socio Economics

Baseline Conditions

- 5.1 The Site is located in Kidlington West ward, bordering Killington East ward. Both have been included in the definition of the 'Local Area'. The wider spatial references are Oxford and Cherwell (Inner Economic Impact Area), Oxfordshire (Outer Economic Impact Area) and England.
- 5.2 The Site is currently partially occupied by Begbroke Science Park which will be retained, located at the centre of the Site. The rest of the Site is active agricultural land (apart from an area of historic landfill). The Local Plan (2015)⁸ recognises the importance of continued expansion of scientific research and the potential for the Science Park to deliver wider benefits for the immediate area through support for the development of a hi-tech cluster and through the wider District with expected growth in scientific research, connecting with local businesses, nurturing enterprise and drawing investment into the District. The Local Plan recognises that the University of Oxford plays a significant and leading role in research both in the UK and worldwide and in this context the University Science Park is an important site (as quoted from the Partial Review Local Plan⁹).
- 5.3 In 2020, the Local Area had a population of 19,000 people¹⁰. From 2011, the population has grown by 3%¹¹. This growth rate is lower than when compared to other spatial levels – Cherwell had a growth rate of 13%, Oxfordshire 11% and England overall 7%¹².
- 5.4 At the time of the 2011 Census, the Local Area had a lower unemployment rate than Oxfordshire and Cherwell and significantly lower than England¹¹. Claimant count provides more recent data on the proportion of working age residents claiming unemployment-related benefits in an area¹³. The rate of claimants of unemployment-related benefits is lower at the Local Area level than Cherwell and Oxfordshire and England¹⁴.
- 5.5 There are 11,000 jobs in the Local Area, which is 13% of the total employment in Cherwell. Half of the jobs in Cherwell in the 'Public administration and defence' sector are located within the Local Area. Similarly, one in seven jobs in Cherwell in the 'Professional, scientific and defence' sector are located in the Local Area.
- 5.6 Oxfordshire has a highly educated population. Rates of degree attainment are 50% at county level, higher within Oxford itself (52%) as would be expected, and slightly lower in Cherwell¹⁵. Local Area rates of qualification attainment in 2011 (the most recent comprehensive data available at this level) were broadly in line with the Cherwell average.
- 5.7 The Indices of Multiple Deprivation (IMD) (2019) provide a measure of relative deprivation at a small area level (Lower-layer Super Output Area) across England. They are based on seven different domains including: income; employment; education, skills, and training; health; crime; barriers to housing and services; and living environment. The Site and immediate surrounds are among the 20% least deprived neighbourhoods in England, except the western neighbourhood of Kidlington (North of Yarnton Road, South of Lyne Road) which is among the 40% most deprived.

- 5.8 The closest deprived neighbourhoods (20% most deprived) are in central (Oxpens and St Ebbes) and south Oxford (Littlemore, Blackbird Leys).
- 5.9 Quod will establish further existing social and economic conditions within the study areas as described below.

Future Baseline

- 5.10 The future baseline will consider expected population projections by 2033 when the Proposed Development is anticipated to be fully complete and operational. Quod will define a future baseline setting out:
- Known changes in baseline provision of community facilities (e.g. planned expansion or decreases in school capacity) excluding the Proposed Development;
 - Background population forecasts not specifically attributed to the Proposed Development; and
 - Background projections of employment and labour market characteristics not specifically attributed to the Proposed Development.

Assessment Scope

Potential Significant Effects

Construction

- 5.11 The assessment will consider the likely significant effects of construction employment on the Inner and Outer Impact Economic Areas (see definitions below in paragraph 5.21).
- 5.12 It will assess the effect of the temporary or permanent loss (if any) of existing economic activity on-site at the Local, Inner and Outer Economic Impact Areas, including consideration of the loss of agricultural tenancies within the Site.

Completed Development

- 5.13 The assessment will consider the following potential likely significant effects:
- Delivery of new homes;
 - Delivery of employment floorspace to support permanent net employment opportunities for labour within the Local Area, Inner, Wider and National Impact Areas.;
 - Economic impact of the Proposed Development in the context of economic growth policies at within the Inner, Wider and National Impact Areas;
 - The effect of the population accommodated by new homes on social infrastructure - specifically education, primary healthcare, community halls, open space and playspace provision;
 - The provision of new social infrastructure as part of the Proposed Development - specifically education, primary healthcare, community halls, open space and playspace provision; and

- Spending effects associated with the new residents and net employees within the Local Area and Inner Economic Impact Area.

Cumulative Assessment

- 5.14 Given the level of certainty on timing and construction methods for the cumulative schemes, it is not considered appropriate to make a quantitative assessment of cumulative construction employment by summing the individual employment projections. It is therefore proposed that this assessment will be presented qualitatively and is not considered likely to be significant.
- 5.15 The cumulative assessment of the completed Proposed Development will present a summary of the same potential likely significant effects as identified for the completed Proposed Development (outlined above). The level of detail in the assessment may be necessarily limited by the level of detail known about the cumulative schemes and the level of certainty about their delivery at the time of the cumulative effects assessment.

Non-Significant Effects

Construction Phase

- 5.16 Based on the level of detail known about the construction programme and construction methods at the outline stage, Quod does not consider it necessary or appropriate to undertake an assessment of the indirect effects of construction employment or effects on the supply chain or procurement and it is proposed that this will be scoped out of further assessment in the ES.
- 5.17 The spatial context of supply chain effects can range from local to national and even international depending on the supply and sourcing of construction materials. These effects are likely to be beneficial but cannot be quantified at this stage so it is proposed that they are scoped out of further assessment in the ES.

Assessment Methodology

Study Area and Spatial Scope

- 5.18 Quod will determine the extent of the study area based on the area within which identified receptors have the potential to be sensitive to effects.
- 5.19 For social infrastructure, this is based on reasonable travel times from the Site or areas used by local authorities to plan and assess provision (particularly in the case of school place planning). It is proposed that the following study areas will apply:
- Within 800m of the edge of the Site boundary for open space and playspace¹⁶.
 - Within 1km of the edge of the Site boundary for primary healthcare services (GPs).
 - Within 1km of the edge of the Site boundary for community halls (as described in Policy PR8).
 - Kidlington and Woodstock School Place Planning Areas for primary schools.
 - Kidlington, Woodstock and Oxford North School Place Planning Areas for secondary schools.

5.20 For the effects of housing provision, this is assessed within the administrative areas of Cherwell and Oxford. Oxford is included because the Site is intended to, in part, meet Oxford's unmet housing need.

5.21 For economic and labour market effects, it is considered that the extent of sensitive receptors has the potential to be wider and it is therefore proposed that the likely significant environmental effects will be assessed at the following levels:

- Local Area: Kidlington East and Kidlington West Wards;
- Inner Economic Impact Area: Oxford and Cherwell;
- Outer Economic Impact Area: Oxfordshire; and
- National (England).

Baseline Assessment

5.22 The socio-economic baseline will use data from sources including (but not limited to):

- The Applicant, with respect to existing economic activity on-site.
- 2021 Census¹⁷;
- 2011 Census¹⁸;
- Office for National Statistics (ONS) Mid-Year Population Estimates (2020)¹⁹;
- Business Register and Employment Survey (2021)²⁰;
- Claimant Count (2022)²¹;
- Housing delivery data from Annual Monitoring Reports from CDC²²;
- Indices of Multiple Deprivation (2019)²³;
- Schools, pupils and their characteristics (2022)²⁴ and information from OCC school published admissions documents;
- Data on healthcare services from NHS Digital²⁵;
- Open space, playspace and community hall locations from Ordnance Survey²⁶ and Sport England data.

5.23 Where more up to date data of comparable quality is available, it will be used.

5.24 Where helpful to aid in understanding or clarity, Quod will use maps, charts and tables to summarise data, including to show the location of facilities within the study areas.

Key Receptors

5.25 The following existing receptors are considered sensitive to potential socio-economic effects arising from the Proposed Development:

- Existing employees and business on-site.
- Open space and playspace within 800m of the edge of the Site boundary²⁷.
- Primary healthcare services within 1km of the edge of the Site boundary.

- Community halls (as described in Policy PR8) within 1km of the edge of the Site boundary.
- Primary schools within Kidlington and Woodstock School Place Planning Areas.
- Secondary Schools within Kidlington, Woodstock and Oxford North School Place Planning Areas.
- Housing markets within the Inner Economic Impact Area.
- The economy and the labour market within the Local Area (Kidlington East and Kidlington West Wards), the Inner Economic Impact Area (Oxford and Cherwell); the Outer Economic Impact Area (Oxfordshire) and at a National (England) level.

5.26 It is not considered possible to ascribe specific numeric ‘values’ or a quantifiable scale of ‘sensitivity’ to all socio-economic receptors due to their diversity in nature and scale. The assessment will therefore focus on the qualitative “sensitivity” of each receptor, and on its ability to respond to change based on recent rates of change and turnover. For example, an area with high unemployment, historic housing under-delivery or where social infrastructure is constrained will have higher sensitivity to socio-economic effects.

Assessment Approach

5.27 It is proposed that the assessment of potential likely significant effects will be undertaken using the following methodology and/or tools:

- Enabling works and construction-related employment effects will be assessed using the Construction Industry Training Board (CITB) Labour Forecasting Tool²⁸.
- Direct operational employment effects will be assessed by applying standard job density ratios from the Homes and Communities Agency Guidance (2015)²⁹ and, if appropriate, additional evidence on density projections based on comparable schemes or additional information (which will be referenced) from the Applicant.
- Delivery of housing will be assessed against policy targets for total homes for Cherwell and in relation to Oxford’s unmet housing need.
- The estimated resident population and child yield will be calculated using both Quod’s Dynamic Population Model and CDC’s Average Pupil Generation Per Dwelling in Appendix 3 of the CDC Developer Contributions Supplementary Planning Document (2018)³² to provide a potential range.
- Demand for education will be assessed by considering the primary and secondary age yield against existing capacity in schools surrounding the Site.
- The national average benchmark of 2,000 registered patients per NHS FTE General Practitioner (GP)³⁰ will be used to assess existing GP capacity against demand arising from the Proposed Development.
- Demand for playspace, open space and community halls will be assessed in line with guidance set out in the CDC Developer Contributions Supplementary Planning Document (2018)³¹.
- Spending generated as a result the completed Proposed Development will be calculated using average household spending figures³² and an average figure for daily worker spending³³.

5.28 As an outline planning application, the socio-economic assessment of the completed Proposed Development will be based on the Parameter Plans and other 'control documents' in the first instance, with an assessment of an Illustrative Scheme provided to give a good indication of the scale and nature of likely significant effects. Where a parameter's variance (e.g. housing unit mix) gives a wide range of potential likely outcomes such that an upper and a lower bound could give a different scale or nature of effect, a likely worst case scenario will be applied for the purposes of a robust EIA assessment based on the following criteria:

- Maximum population generating scenario for assessment of demand on social infrastructure;
- Minimum employment generating scenario for assessment on employment and economic effects; and
- Minimum housing provision scenario for assessment of housing provision.

6 Cultural Heritage

Baseline Conditions

- 6.1 Baseline assessments have been undertaken for archaeology and built heritage and a summary is provided below. To date, this work has included a review of desk-based information, site survey and geophysical survey undertaken in 2022, with trial trenching to be carried out in December 2022 and January 2023. The study area for the baseline studies is set out below.

Archaeology

- 6.2 The baseline assessments have indicated that the Site is located within an area of high archaeological potential. As such, it has capacity to contain archaeological material across a range of periods from prehistoric to post-medieval. Numerous Neolithic and later prehistoric artefacts have been found within and near the Site, indicating prehistoric activity in the area. A series of cropmark features, ranging in potential date from the Bronze Age to Romano-British period (see Figure 1 in Appendix C), have been identified across the Site in historic and recent aerial photographs. Recent geophysical survey at the Site has confirmed the presence of at least three areas of settlement activity of potentially early Iron Age to Romano-British date. It is considered that remains of this nature, if present, would be of at least regional significance.
- 6.3 During the medieval period, the Site is likely to have been largely part of an open field system of agriculture to the east of the medieval villages of Begbroke and Yarnton. The Site remained primarily agricultural in later periods, as a mix of arable and pastoral land (Figure 2 in Appendix C).
- 6.4 More recent land use within the Site has included gravel extraction, the Bebroke Science Park and access road, but the majority of the Site has seen no substantial development (see Figure 3 in Appendix C). Beyond the footprint of existing and previous development, it is considered that the archaeological horizon is likely to have survived largely intact.
- 6.5 Recent geophysical survey at the Site (Figure 6.1) has confirmed the presence of extensive archaeological deposits previously seen in, or suggested by, aerial photographs or LiDAR and has also identified new areas of archaeological interest.

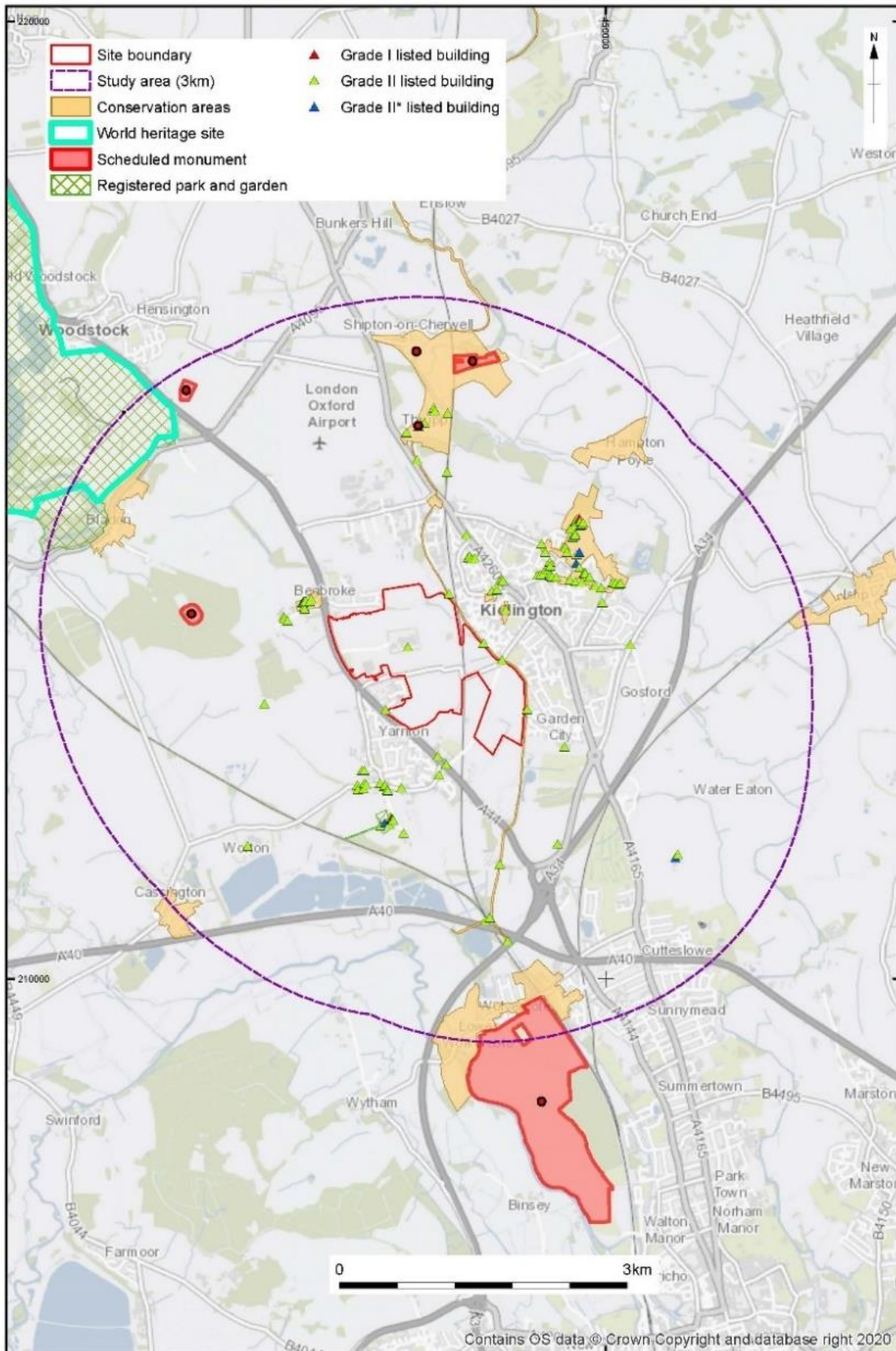
Figure 6.1: Preliminary magnetic gradient plot of Site (after Magnitude Surveys, 2022)



Built Heritage

6.6 There are six scheduled monuments within 3km of the Site. There are over 200 listed buildings within 3km of the Site (Figure 6.2), concentrated primarily in groups to the north east of Site in Kidlington, to the north in the hamlet of Thrupp, to the south at Yarnton and to the north-west in the village of Begbroke. There are several listed buildings on and near to the Site, including the single listed building on-site, the Grade II listed Begbroke Hill farmhouse, a c.1604 three storey limestone building that is now part of the Begbroke Science Park. There are five structures located directly adjacent to the Site boundary, all of which are Grade II listed. To the west of Site is Tudor Cottage, a pair of 17th century cottages on Woodstock Road. There are four canal bridges and locks on the Site's eastern boundary along the Oxford Canal, which were all built in the 18th or 19th centuries. There are two Grade I listed buildings close to the Site which will be considered as key receptors. These include the Church of St Mary in Kidlington around 1.6km north east of Site and the Church of St Bartholomew in Yarnton 950m south of Site, both of 12th century origins.

Figure 6.2: Designated heritage assets



- 6.7 There are two Registered Parks and Gardens within 3km of the Site. Grade II Yarnton Manor, a 10 ha site which lies at the southern tip of the village of Yarnton, is located approximately 900m south of Site. Grade I Blenheim Place to the north west.
- 6.8 Blenheim Palace, a World Heritage Site and Registered Park and Garden, is located 3km north west of Site. Further assessment will be carried out as part of the EIA process, but it is not currently anticipated that the Proposed Development will affect the setting and significance of this heritage asset.
- 6.9 There are 13 Conservation Areas within 3km of Site. The most likely to be affected by the Proposed Development are Begbroke and the Oxford Canal Conservation Areas. These will be assessed as key receptors.
- 6.10 The locations of designated and non-designated heritage assets are illustrated in Figure 6.2 and Figures 1 – 3 in Appendix C as a broad reference for the heritage assets located on and in the vicinity of the Site.

Future Baseline

- 6.11 In the absence of the Proposed Development, it is considered that existing land uses within the Site would be retained and management of the cultural heritage resource would continue on a similar basis to the existing situation. The land is predominantly agricultural in nature, which largely preserves archaeological resources. It is also considered that the setting of the built heritage within and around the Site would also remain unchanged in the absence of the Proposed Development.

Assessment Scope

- 6.12 Groundworks associated with construction of the Proposed Development are likely to be extensive, associated with creation of substructure of buildings, piling, foundations, landscaping and the installation of infrastructure, including servicing and drainage. These activities as well as the completed Proposed Development itself, have the potential to affect the archaeological and heritage environment resource of the Site and its environs. It is proposed that the Grade II listed farmhouse within the Site would be retained and would not be subject to alterations as part of the Proposed Development.

Potential Significant Effects

Construction

- 6.13 It is considered that potential environmental effects of the construction phase on heritage assets are likely to include:
- Impacts of ground disturbance and excavation activities which have the potential to disturb or wholly remove buried archaeological deposits; and
 - Temporary effects (from visual impacts, noise/light pollution, dust and increased foot and vehicular traffic) on the setting of built heritage assets and historic landscape character.

Completed Development

- 6.14 Archaeological remains within the footprint of the Proposed Development are likely to have been significantly damaged or removed during the construction process and will not be further affected by the operation of the Proposed Development. The Site has the potential to contain waterlogged deposits of archaeological interest, and these may remain unaffected in areas of green infrastructure and open space. Any such deposits may be affected by any significant dewatering which occurs as part of the operation of the Proposed Development and this will therefore be assessed in the ES.
- 6.15 It is considered that the completed Proposed Development also has the potential to affect the setting of built heritage and the wider landscape. The built heritage assessment will therefore include both relevant designated and non-designated heritage assets. Potential likely significant effects could include:
- Changes to the setting of key designated built heritage receptors (listed buildings, Conservation Areas etc.) through the loss/change of aspects of their historic setting or key views of or across receptors as a result of the existence or operation of the Proposed Development;
 - Changes to the setting of built heritage receptors and historic landscape character through other factors, including increases in lighting, traffic flow and noise.

Cumulative Assessment

- 6.16 It is considered that the cumulative schemes in the wider area around the Site could exacerbate or materially impact the setting of relevant built heritage assets. Although few impacts are anticipated, the ES chapter will consider potential likely significant effects with the identified cumulative schemes.

Non-Significant Effects

- 6.17 It is proposed that the following aspects will be scoped out of the ES:
- Direct impacts upon designated built heritage assets during the construction phase as these would be avoided through measures included in the CEMP.
 - Effects from the completed Proposed Development on designated and non-designated heritage assets which are clearly screened by topography/vegetation and have no significant historical association. These receptors would be identified at the assessment stage and set out in the ES chapter. At this stage, it is anticipated that non-significant effects may include potential setting effects on designated assets within the wider (3km) study area which have no intervisibility or proven association with the completed Proposed Development. However this will be confirmed once relevant information is available, e.g. noise, traffic, visual.

Assessment Methodology

Study Area and Spatial Scope

- 6.18 It is proposed that a 2km study area around the Site will form the study area for the archaeological resource. This area is considered sufficient to characterise and understand the archaeological and historic context and assess its archaeological potential.

6.19 It is proposed that a 3km study area around the Site will form the study area for built heritage and historic landscape character. This wider study area will ensure that all sites within the current visibility viewshed of the Site are identified, as determined by the Zone of Theoretical Visibility (ZTV) – see Chapter 14 for further details – and any potential impacts assessed.

Baseline Assessment

6.20 Baseline conditions will be established by the production of desk-based assessments of the archaeological and built heritage resource. These will be included as appendices to the ES. The following data sources and surveys will be consulted to inform the content of these reports:

- The National Heritage List for England (NHLE) for designated heritage assets
- Oxfordshire Historic Environment Record (HER) for non-designated heritage assets and archaeological events;
- Oxfordshire History Centre for historic maps and manuscripts;
- OCC Historic Landscape Characterisation data;
- National Library of Scotland for Ordnance Survey maps;
- LiDAR data;
- Historic England Archives in Swindon for historic aerial photographs and National Mapping Project (NMP) data;
- Geo-technical data as held by the British Geological Survey and intrusive site investigations undertaken by the project team; and
- Other relevant primary and secondary sources included published and unpublished works as held by OA, the Oxfordshire History Centre and other archives as identified.

6.21 The assessments will also be informed through a site visit, detailed geophysical survey and a trial trenching archaeological evaluation.

6.22 A site visit has been carried out to assess archaeology within the Site and the built heritage in the wider environs of the Site. This sought to ground-truth the results of the desk-based research and provide additional information upon the historic character of the Site and the integrity of the setting and of nearby heritage assets.

6.23 In tandem with desk-based assessment and site visit, a non-intrusive geophysical (magnetometer) survey, designed to further clarify and assess the nature of the below ground archaeological resource potentially affected by the Proposed Development, has been undertaken in September 2022. The results of this survey will be summarised in the desk-based assessment and the findings included as an appendix to the ES chapter.

6.24 A trial trenching evaluation is to be carried out on the Site in December 2022 and January 2023. The scope of these works have been agreed with the Oxfordshire County Archaeological Service through a Written Scheme of Investigation document. The scope of the evaluation agreed with OCC is a 2% sample of the developable area (c. 80 ha), with contingency for up to another 1% sample. This is to be excavated in the form of 298 trial trenches, each measuring 30 m by 1.8m in plan, to be laid out within the area to test geophysical anomalies and 'blank areas', unless prevented by on-site obstructions or archaeological considerations.

Key Receptors

6.25 The key archaeological receptors will include any archaeological deposits within the Site. The key built heritage receptors are likely to include listed buildings, scheduled monuments, registered parks and gardens, conservation areas and the World Heritage Site, within or in the Zone of Influence of the Proposed Development. The assessment will also consider other non-designated heritage assets, such as locally listed buildings.

Assessment Approach

6.26 The ES chapter will be prepared in accordance with the Chartered Institute for Archaeologists (CIfA) Standards and Guidance for Historic Environment Desk-based Assessments (2020)³⁴ and Planning Practice Guidance (2021)³⁵ - Historic Environment.

6.27 The work will be carried out in accordance with all relevant national and local guidance documents including The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning 3 ('GPA3') (Historic England (HE), 2017)³⁶; Managing Significance in Decision-Taking in the Historic Environment Good Practice Advice in Planning 2 (HE, 2015)³⁷; and Statements of Heritage Significance: Analysing Significance in Heritage Assets Historic England Advice Note 12 (HE, 2019)³⁸. Reference to IEMA's Principles for Cultural Heritage Impact Assessment (2021)³⁹ will also be provided.

6.28 The assessment will also be informed by the relevant legal and policy framework, including the Ancient Monument and Archaeological Areas Act 1979, Planning (Listed Buildings and Conservation Areas) Act 1990, Section 16 of the NPPF, and the CDC Local Plan. Assessment data from other relevant assessments within the ES and planning application, e.g. noise, traffic, lighting, will also be reviewed.

6.29 Consultees will include relevant representatives from OCC (Archaeological Officer), Historic England and the CDC conservation officers.

6.30 Likely significant effects will be assessed using a staged process, aligned to GPA3, that will, in summary:

- Identify and assess the sensitivity of the heritage assets;
- Identify and assess the magnitude of impact to the heritage assets; and
- Assess the significance of effect, using a matrix-based approach which considers the importance and magnitude of effect.

6.31 The sensitivity of a receptor is based on the relative importance (or significance in NPPF terms) of the heritage asset. The assessment methodology presented here has been adapted from that outlined in the Design Manual for Roads and Bridges (DMRB) Section 3 Part 1 and 2 in the amended document LA 104: Environmental Assessment and Monitoring⁴⁰. Although this was originally written for road schemes, it is now generally accepted as a suitable assessment methodology for the appraisal of all types of developments. The updated version of DMRB divides the cultural heritage resource into three sub-topics: Archaeological Remains, Historic Buildings and Historic Landscape. The assessment of sensitivity (significance) will consider the archaeological, historic, architectural, and artistic interests of the heritage asset.

- 6.32 The magnitude of an impact will be described as high, medium, low, negligible or no change. Such terms are relative to the receptor affected by the impact (i.e., a particular impact can result in a beneficial effect on one receptor and an adverse effect on another). These definitions are based upon the DMRB Section 3 Part 1 and 2 in the amended document LA 104. Impacts may be direct or indirect. The effects during construction are anticipated to be short to medium term duration (temporary) while post-construction effects are anticipated as being of long-term duration (permanent) unless otherwise stated. The exception to this is direct construction effects upon the archaeological resource within the Site which are considered to be permanent.
- 6.33 The relative significance of an effect is largely a product of the value and sensitivity of the identified receptor and the magnitude and duration of the impact, but the assessment is also informed and guided by professional judgement.

7 Transport and Access

Baseline Conditions

Existing Baseline Conditions

Highway Network

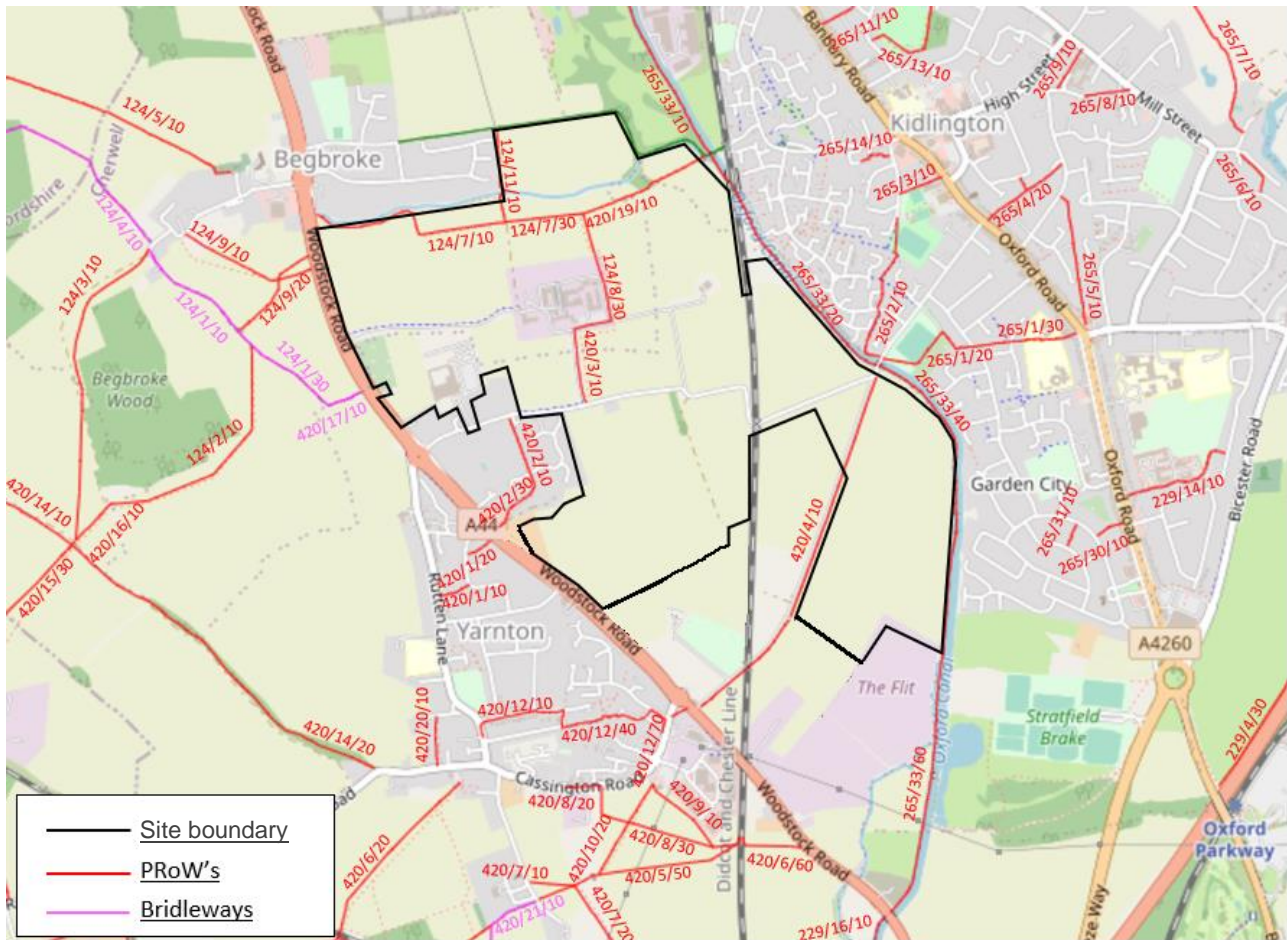
- 7.1 The key highway routes within the study area are illustrated in Figure 5.3 later in this section of the Scoping Report. The A44 passes with a north-south orientation immediately to the west of the Site. To the south, the road forms a grade-separated junction with the A34 at the Peartree Interchange before joining the Oxford ring road at its southernmost extent; a roundabout junction with the A40 referred to as the Wolvercote roundabout. Further north, the A44 serves destinations in Oxfordshire that include Woodstock and Chipping Norton.
- 7.2 Several key strategic routes intersect with the A44 close to the Site. To the south, the A4260 meets the A44 at Loop Farm roundabout and the A34 intersects the A44 at a grade-separated interchange. Locally, the A34 connects Oxford with the M40 and Bicester to the north east and Abingdon to the south west. In addition to supporting strategic connections, the A44 also provides points of access into the Site via Sandy Lane and Begbroke Hill.
- 7.3 Sandy Lane is a single carriageway passing through the Site that connects the A44 (to the west) with Yarnton Road and Kidlington (to the east). Within the Site, Sandy Lane intersects the Cherwell Valley railway line with level crossing infrastructure currently in place. Further east of the level crossing, Sandy Lane becomes Yarnton Lane and crosses the Oxford Canal into Kidlington via a single lane, signal-controlled bridge with a 3-tonne weight limit. Within the of the Site, Yarnton Lane crosses the railway line with an existing level crossing; this route is currently closed to vehicles and only open to pedestrians and cyclists.
- 7.4 Begbroke Hill is a single lane carriageway within the Site that connects Begbroke Science Park with the A44. It forms the eastern approach of a three-armed, signal-controlled junction with the A44. The existing Begbroke Science Park generates vehicle movements, including from employees, visitors and deliveries/servicing.
- 7.5 North of the Site, Langford Lane connects the A44 with the A4260 to the west and east, respectively. It provides direct access to Oxford Airport as well as a large commercial/industrial estate to the north of Kidlington, Oxford Technology Park.

Pedestrian Network

- 7.6 A series of Public Rights of Way (PRoW) exist within and in the vicinity of the Site. Immediately east of the existing Begbroke Science Park a footpath follows a north-south orientation and connects Sandy Lane to the south with Rowel Brook to the north. Other footpaths follow the general east-west alignment of Rowel Brook, in addition to crossing Rowel Brook and providing an onwards connection to Begbroke Lane, which is designated as a restricted byway. On the eastern Site boundary, a canal towpath forms part of the 'Green Belt Way'; a 50 miles circular route through the Oxford green belt. Additional PRoWs are located along Yarnton Lane

between the A44 and the canal towpath in the south of the Site. The extent of the PRow network on and around the Site is illustrated in Figure 5.1.

Figure 5.1: Existing Public Rights of Way Network

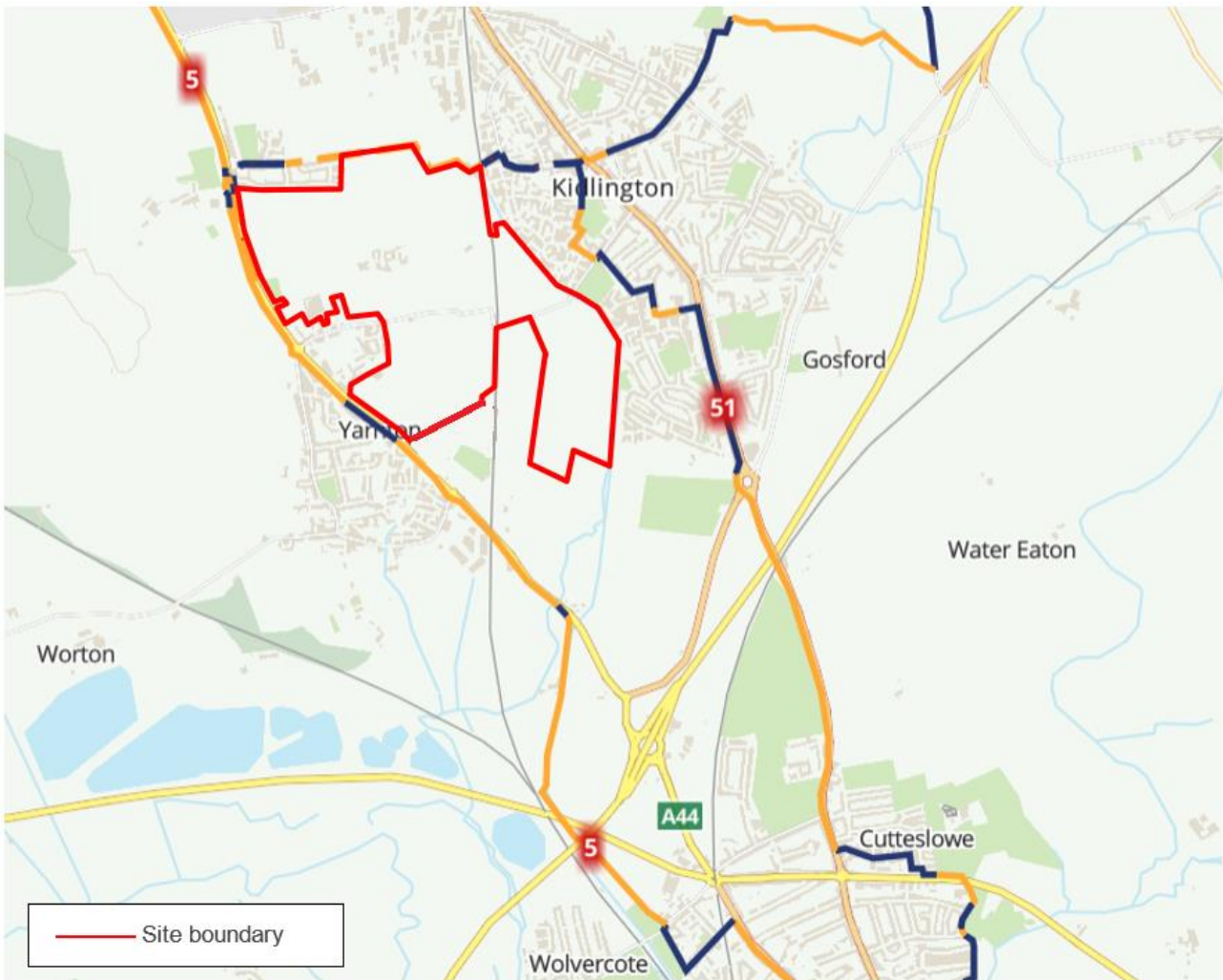


7.7 Alongside the PRow network, key footway connections link the Site with existing local amenities and services. Footways are provided along the radial routes of the A44 and A4260, which connect Oxford with Woodstock and Kidlington, respectively. Limited east-west crossing opportunities are provided across the A44, which creates a barrier to pedestrian permeability between the Site and origins/destinations. Begbroke Hill has a shared footway/cycleway along its northern edge but no pedestrian facilities are provided along Sandy Lane.

Cycle Network

7.8 The A44 forms part of National Cycle Route (NCR) 5; a long-distance route that begins in Reading and connecting to Oxford and destinations further west. NCR 51 is another long-distance cycling route that begins in Oxford and routes to Bicester, Milton Keynes and Bedford and routes along Kidlington High Street and residential streets. Towards the north east corner of the Site, NCR 51 meets Begbroke Lane, a designated byway that can be used by cyclists. Figure 5.2 shows the national cycle network in the vicinity of the Site.

Figure 5.2: National Cycle Routes



7.9 The towpath along the Oxford Canal has been upgraded between Oxford city and just to the south of the Site.

Public Transport Network

7.10 The Site is currently served by the S3 bus service which runs between Oxford and Chipping Norton. This service has a 30-minute frequency from Monday to Saturday with increased services in the peak periods. The journey time is approximately 33 minutes from Begbroke to Oxford City Centre (Oxford railway station).

7.11 The Peartree Park and Ride facility is located at the Peartree Interchange (A44 / A34 junction) circa 2.3km south of the Site which has 1,035 parking spaces and provides bus services to Oxford city centre 5 times per hour (i.e. 12 minute frequency).

7.12 Oxford Parkway railway station is located approximately 1km to the south east of the Site. Oxford Parkway forms part of the Oxford-London Marylebone line via Bicester and provides connections to a range of stations including London, Reading, Birmingham and Manchester Piccadilly. During weekday peak hours, services between Oxford Parkway and London

Marylebone operate with a frequency of 2-3 direct trains per hour in each direction with a journey time of 1 hr 10 mins.

Future Baseline

7.13 As agreed with Oxfordshire County Council ('OCC'), the North Oxford VISSIM model is to be used to assess the cumulative impact of development generated traffic from the PR sites on the operation of the highway network. The 2031 Reference Case VISSIM model (i.e. future baseline) includes a number of consented developments, which have been agreed with OCC:

- Eynsham Garden Village;
- West Eynsham Strategy Development Area (SDA);
- Oxford Airport;
- West Thornbury Road, Eynsham;
- Eynsham Nursery and Plant Centre;
- Land East of Woodstock (Policy EW1c);
- Barton Park;
- Wolvercote Papermill Site;
- St Frideswide Farm (SP4);
- Hill Rise, Woodstock (Policy EW4);
- Banbury Road, Woodstock (Policy EW5);
- Oxford North (CS6);
- Begbroke Science Park; and
- Oxford Technology Park.

7.14 The rail infrastructure at Oxford railway station is close to full capacity and currently would be unable to accommodate the increase in demand for services. To increase capacity, 'Oxford Corridor Phase 2' is currently being implemented by Network Rail and will provide a number of improvements by 2024 including:

- New platform at Oxford railway station with improved passenger facilities;
- New secondary station entrance at Oxford railway station on the western side of the railway to improve accessibility and passenger experience; and
- Closure of level crossings at Yarnton Lane and Sandy Lane (within the Site), as well as creation of three high-speed crossovers at Oxford North Junction. These level crossing closures would provide capacity for an additional two freight trains per hour between Birmingham and Oxford on the Cherwell Valley railway line, and increased maintenance access and safety improvements.

7.15 The Yarnton Lane and Sandy Lane level crossings are to be replaced by Network Rail bridges, subject to the necessary consents. The policy position in the Local Plan is for the replacement bridges to be pedestrian and cycle bridges and Sandy Lane to be closed to general traffic. It is understood that the Network Rail application is proposed to include the closure of Sandy Lane to general traffic. Therefore the 2031 Reference Case VISSIM model includes the closure of Sandy Lane to general traffic. A sensitivity test is also proposed for the 2031 Reference

Case (without Sandy Lane closure) in the event that Network Rail do not secure the necessary consents for the Sandy Lane proposals.

7.16 Other committed infrastructure improvements included in the 2031 Reference Case VISSIM model are:

- Improvement to Kidlington roundabout for pedestrians and cyclists;
- Improvement to A44 between Peartree roundabout and Cassington roundabout focussed on bus priority and walk and cycle improvements;
- Improvement to A40 for sustainable travel including Eynsham park and ride and bus priority and walk and cycle improvements along the A40 between Eynsham and Oxford city; and
- Oxford North committed improvements including sustainable transport improvements to the A44 in the vicinity of the Oxford North site as well as the internal link road that is connected at either end by two signalised junctions; one on the north side with A44 Woodstock Road and the other one on the south side with A40 Northern Bypass Road.

Assessment Scope

Potential Significant Effects

Construction

7.17 The transport chapter will consider the peak period of the construction phase, taking account of any mitigation measures that are proposed to be in place. This will ensure that the assessment is robust and considers the period in which construction traffic impacts are anticipated to be at their highest. At many points in the construction programme, traffic will be considerably lower than that which will be assessed although the duration of effects will be taken into account in the assessment of likely significance.

7.18 The following potential likely significant transport and access related effects during the construction phase have been identified and will be assessed in the ES:

- Temporary disruption to pedestrians, cyclists and road vehicle users during the construction works with regards to severance, pedestrian amenity, pedestrian delay, fear and intimidation, driver delay and road safety as well as any temporary diversions/stopping up of PRow; and
- Temporary increase of heavy goods vehicles ('HGV') and worker vehicle movements during the construction works on the local road network and associated impacts on road users.

7.19 The cumulative assessment will need to consider the cumulative traffic effects of the construction of all of the allocated PR sites in the Local Plan and other cumulative schemes of relevance.

Completed Development

7.20 The Proposed Development is being designed to minimise travel by car and a sustainable transport strategy is being developed to support the development of the Site, in consultation with stakeholders.

7.21 The following potential likely significant transport and access related effects once the Proposed Development is complete have been identified and will be assessed in the ES:

- Effects of the operational Proposed Development upon traffic flows with regards to driver delay and road safety;
- Effects of the operational Proposed Development upon pedestrian and cycle journeys, accessibility and facilities with regards to severance, pedestrian amenity, pedestrian delay and fear and intimidation; and
- Effects of the operational Proposed Development upon public transport capacity and accessibility, including the wider benefits of improved public transport capacity.

7.22 The cumulative assessment will need to consider the cumulative traffic and access effects of the completion of all of the allocated PR sites and other cumulative schemes of relevance.

Cumulative Effects (Allocated Sites and Other Committed Schemes)

7.23 The 2031 Reference Case includes committed development and transport infrastructure as set out earlier in this section. A sensitivity test of Sandy Lane not being closed to general traffic is also proposed for the 2031 Reference Case as the necessary consents have not yet been granted to Network Rail.

7.24 The other PR sites within the Local Plan will form part of the 'with development' cumulative impact assessment as set out in the assessment scenarios later in this section.

7.25 It is not proposed to include any further cumulative schemes within the traffic modelling as they are not consented, and therefore there is lack of certainty of the scheme coming forward, limited information is available, and/or or they do not have associated transport infrastructure associated with them to mitigate the effects. Loading traffic onto the network without mitigation would result in an unrealistic assessment.

Non-Significant Effects

7.26 The assessment of transport effects will be undertaken in accordance with the Guidelines for the Environmental Assessment of Road Traffic⁴¹ ('IEMA Guidelines').

7.27 Within the IEMA Guidelines, two broad rules are suggested that can be used as a screening process to define the scale and extent of the assessment:

- Rule 1: include highway links where traffic flows would increase by more than 30% (or the number of HGVs would increase by more than 30%).
- Rule 2: include any other specifically sensitive areas (where sensitivity is defined as high) where traffic flows have increased by 10% or more.

7.28 The above rules will be applied to the traffic flows to screen road links in/out of the assessment. Those road links that do not meet Rules 1 or 2 will be concluded to not have a likely significant transport effect and will be scoped out of further assessment in the ES.

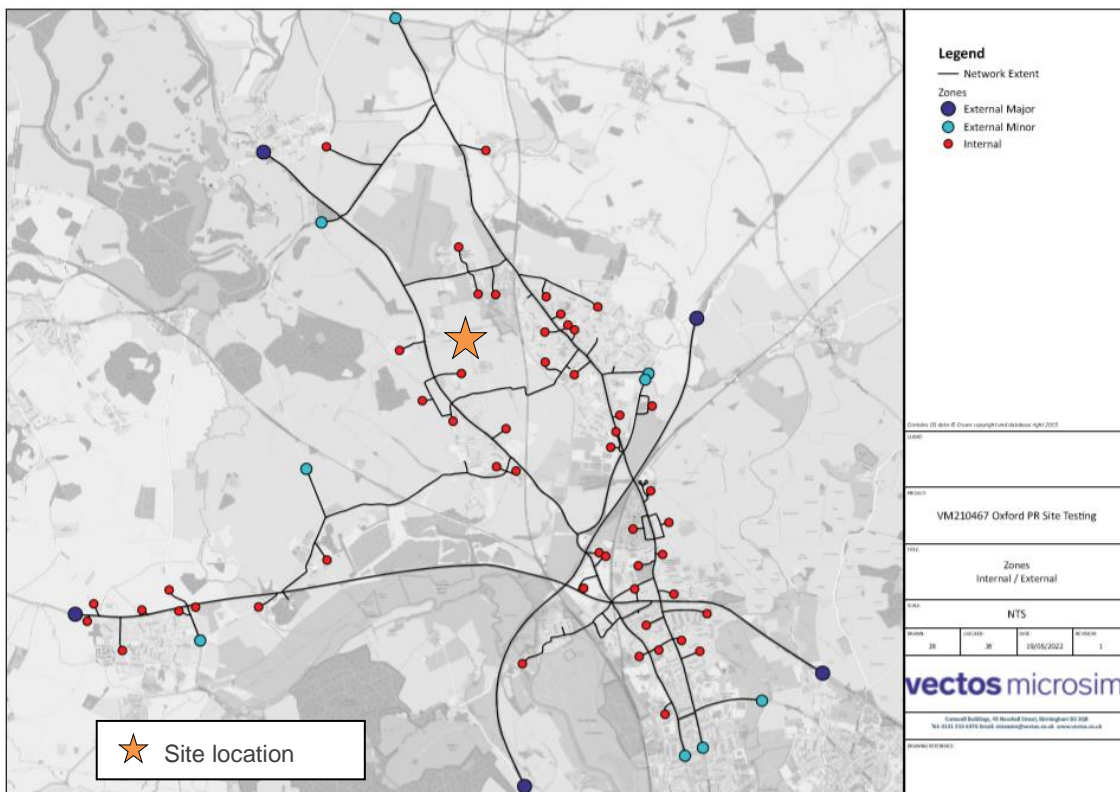
7.29 In addition, there are not envisaged to be hazardous loads generated by the Proposed Development and therefore it is proposed that the assessment of hazardous loads is scoped out of the assessment.

Assessment Methodology

Study Area and Spatial Scope

- 7.30 The study area for the assessment has been defined in consultation with OCC, as local highway authority, based on the area where there is likely to be a transport impact resulting from the construction and/or operation of the Proposed Development.
- 7.31 The study area covers the highway network to the north of Oxford including the A44, A4260, A34 and A40 corridors. The geographic extent of the traffic model to be used as the basis of the assessment has been agreed with OCC and is illustrated in Figure 5.3. As set out above, IEMA Rules 1 and 2 will be applied to the links within the study area to screen road links in/out of the assessment.

Figure 5.3: Extent of North Oxford VISSIM micro-simulation model



Baseline Assessment

- 7.32 The North Oxford VISSIM micro-simulation model will be used to establish the baseline highway conditions. The base model has been validated and approved by OCC.
- 7.33 Baseline conditions on the local road network would be established through site visits, travel data, personal injury/accident data and outputs from the VISSIM model.

Key Receptors

7.34 In the context of transport, receptors are considered to be users of the local highway network to whom the transport effects of the Proposed Development from its construction and operation would be perceptible. These include:

- Non-motorised users using the local highway network (including pedestrians, cyclists and equestrians); and
- Drivers / passengers of motorised vehicles using the highway network.

Assessment Approach

7.35 The assessment of transport effects will be undertaken in accordance with the IEMA Guidelines. Consultation will be undertaken with the strategic and local highway authorities, National Highways and OCC respectively.

7.36 The following scenarios are proposed to be assessed:

Future Baseline Scenarios

1. 2031 Reference Case with Sandy Lane level crossing open.
2. 2031 Reference Case with Sandy Lane level crossing closed by Network Rail.
- 2a. 2031 Reference Case with Sandy Lane level crossing closed by Network Rail and enhanced pedestrian/cycle bridge implemented.

With Development Scenarios

3. 2031 Reference Case with Sandy Lane level crossing closed by Network Rail + Proposed Development. This scenario will be tested against Future Baseline Scenario 2. A qualitative assessment of pedestrian and cyclist impacts will be undertaken against Future Baseline 2a, as delivery of the enhanced bridge has no impact on VISSIM modelling scenarios.
4. 2031 Reference Case with Sandy Lane level crossing closed via Traffic Regulation Order for closure of Sandy Lane to vehicles but remaining open to pedestrians/cycles + Proposed Development. This scenario is for policy compliance and will allow the EIA to report on the effect of the closure as part of the 'EIA Development'.

7.37 The Yarnton Lane level crossing closure would be assumed in both Reference Cases but not in the 'with development' scenarios as this is not necessary, being currently closed to vehicles.

7.38 The following paragraphs describe the relevant factors to be assessed in the ES chapter for the construction and operational phases of the Proposed Development.

Severance

7.39 Severance is defined as the perceived division that can occur within a community when it becomes separated by a major traffic artery. Such division may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself.

- 7.40 The measurement and prediction of severance is difficult, but relevant factors include road width, traffic flow, speed, the presence of crossing facilities and the number of movements across the affected route.
- 7.41 IEMA Guidelines suggests that changes in traffic flow of 30%, 60% and 90% would be likely to be low, medium and high magnitude of impact on severance, respectively.

Driver Delay

- 7.42 IEMA Guidelines note that driver delay can occur at several points on the network, although the effects are only likely to be significant when the traffic on the highway network is predicted to be at or close to the capacity of the system. An assessment of driver delay will be provided in the Transport Assessment (TA) based on the VISSIM model and summarised in the ES chapter.

Pedestrian Delay

- 7.43 IEMA Guidelines note that changes in the volume, composition and/ or speed of traffic may affect the ability of people to cross roads. Typically, increases in traffic levels result in increased pedestrian delay, although increased pedestrian activity itself also contributes. The IEMA Guidelines refer to a report published by the Transport Research Laboratory⁴², as providing a useful approximation for determining pedestrian delay. This research concluded that mean pedestrian delay was found to be 8 seconds at flows of 1,000 vehicles per hour and below 20 seconds at 2,000 vehicles per hour for various types of crossing conditions.
- 7.44 A two-way flow of 1,400 vehicles per hour is proposed to be adopted as a lower threshold for assessment (equating to a mean 10 second delay for a link with no pedestrian facilities). Where mean traffic flow is below this threshold, significant effects on pedestrian delay are unlikely.

Pedestrian Amenity

- 7.45 IEMA Guidelines define pedestrian amenity as the relative pleasantness of a journey and can include fear and intimidation, if relevant. As with pedestrian delay, amenity is affected by traffic volumes and composition along with pavement width and pedestrian activity. The IEMA Guidelines suggest thresholds of significance should be where the traffic flow is doubled.

Fear and Intimidation

- 7.46 IEMA Guidelines note that a further impact traffic may have on pedestrians and cyclists is fear and intimidation. The impact of this is dependent upon the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by factors such as narrow pavement widths.
- 7.47 In the absence of commonly agreed thresholds, the IEMA Guidelines provide a set of thresholds that can be used as a first approximation of the likelihood of pedestrian and cyclist fear and intimidations. The thresholds define the degree of hazard to pedestrians and cyclists as a result of change in average traffic flow, HGV flow and average speed (mph) over a 24-hour day.

Accidents and Safety

- 7.48 IEMA Guidelines do not include any definition of significance in relation to accidents and safety, suggesting that professional judgement would be needed to assess the implications of local circumstance, or factors which may increase or decrease the risk of accidents. The full results of the accident analysis will be reported in the TA and summarised in the ES chapter.

Significance of Effects

- 7.49 The effect of the Proposed Development on transport is determined with due regard to the sensitivity of the receptor and magnitude of impact as set out in Chapter 4 of this Scoping Report. However, in accordance with the IEMA Guidelines, professional judgement will also be applied as well as consideration of absolute levels of traffic and the percentage change in traffic. Paragraph 1.11 of the IEMA Guidelines states that *“the guidelines are intended to complement professional judgement and the experience of trained assessors”* and goes on to state that *“the experience and expertise of the assessor will remain of prime importance in conducting an environmental assessment.”* The IEMA Guidelines also state that *“the assessment of impacts will need to determine both the change in magnitude of the impacts as well as their absolute levels.”*
- 7.50 The ES transport chapter will be accompanied by a Transport Assessment, a Travel Plan, Construction Traffic Management Plan, and Delivery Servicing Plan.

8 Noise and Vibration

Baseline Conditions

- 8.1 The A44 runs along the western Site boundary and is the dominant source of relatively continuous traffic noise affecting the surrounding area. Other sources of road traffic noise in proximity to the Site include the A34 approximately 1 km to the south east of the Site, the A4260 that runs through Kidlington which is approximately 450 m from the east of the Site, and Sandy Lane which is a local road running through the middle of the Site connecting the A44 to Kidlington. There is a Noise Action Plan Important Area on the A44 at Yarnton and three smaller areas located on the A44 north of the Site access.
- 8.2 The Cherwell Valley railway line runs through the Site, which is used by both passenger and freight trains. The typical maximum number of train pass-bys within a 1-hour period is 15 trains, 2 freight and 13 passenger trains⁴³. The measured level at short-term measurement location 2 was $L_{Aeq,1hour}$ 73 dB.
- 8.3 Oxford Airport is located approximately 1 km north of the Site with runways that run south towards the Site. The airport largely caters for light aircraft (propeller planes) and private jets, which produce intermittent, high noise events in the area during fly-overs. Publicly available data suggests the airport typically has around 11 arrivals and 12 departures on an average weekday⁴⁴. In 2005, Oxford Airport signed a Section 106 Agreement with CDC which required:
- No movements between midnight and 06:00 unless for emergencies;
 - No training circuits before 07:00 hours and after 23:00 on any day;
 - No more than 160,000 movements per year (excluding emergency flights); and
 - Restrictions on location of, time and duration static engine testing for jet aircraft (no more than 6 hours at weekend and 3 hours at weekends and not before 07:00 or after 19:00 on any day).
- 8.4 Begbroke Science Park, located in the centre of the Site, contains rooftop mechanical plant items that run constantly as they are used by the laboratories. The measured level at short-term measurement position 5 (see Figure 8.4) was $L_{A90,15min}$ 49 dB, and dominated the noise environment at this location.
- 8.5 The noise contour map is of the existing baseline presented in Figure 8.1 and has been produced using noise modelling software (CadnaA). This includes noise sources representing the A34, A44, A4260, Cherwell Valley rail line, and mechanical plant associated with the Begbroke Science Park laboratories, calibrated using the measurements taken during the baseline survey.
- 8.6 Oxford Airport (publish aircraft noise contour maps on their website for different types of aircraft. The noisiest aircraft, in terms of impact on the Site, appears to be the 'Class 3 Aircraft Type Citationjet, Departure Runway 19'. The noise contour map for this aircraft has been presented in Figure 8.2 to represent the worst-case scenario.

Figure 8.1: Baseline Noise Contour map

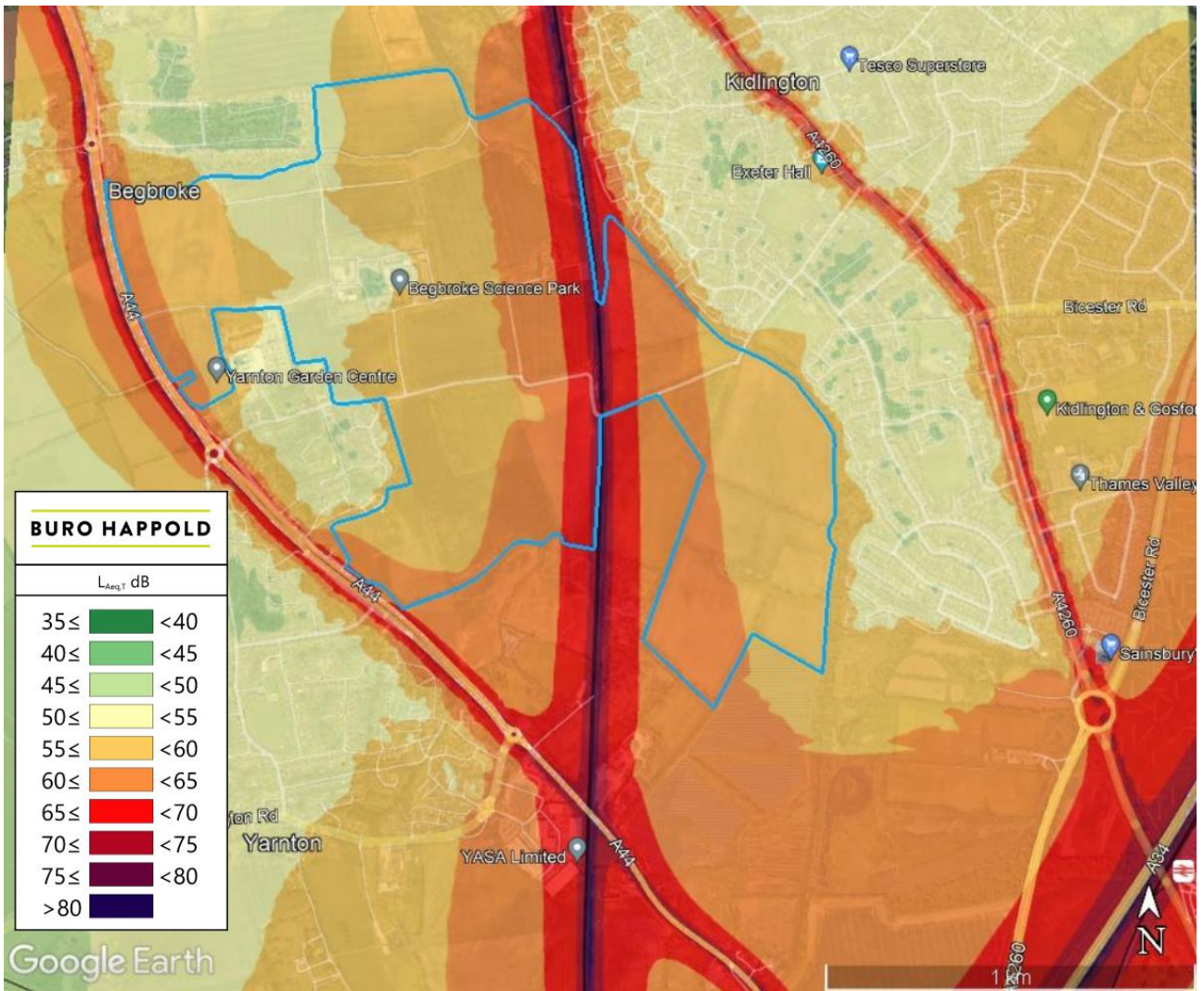
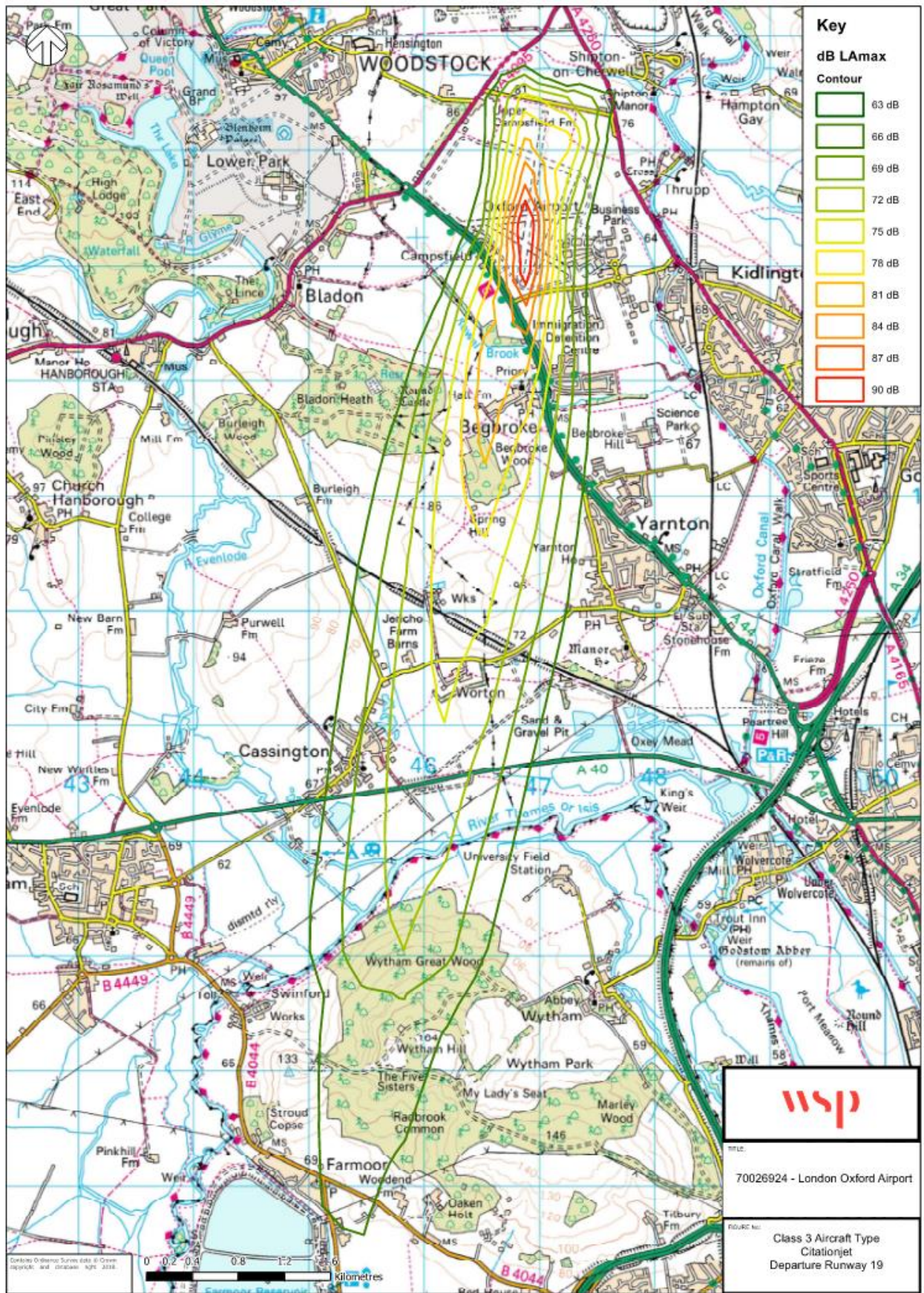


Figure 8.2: Aircraft noise contour, worst-case (source: Appendix D: Aircraft Noise Contours, WSPi)



Future Baseline

- 8.7 In the absence of the Proposed Development, the future noise environment is likely to continue to be dominated by road traffic, aircraft, and rail noise. Most nearby committed developments are for new dwellings which are not expected to materially change the noise environment (although they may generate additional road traffic noise). The only exception to this is the committed development at the Science Park.
- 8.8 There are emerging proposals for National Rail upgrades to the Cherwell Valley railway line which would likely increase the number of train movements through the Site. Growth in flight numbers is also expected at Oxford Airport. These are likely to increase the ambient noise levels (L_{Aeq}) in the area from these sources, however due to their transient nature they may not increase the underlying background sound levels (L_{A90}).

Assessment Scope

Potential Significant Effects

Construction

- 8.9 It is considered likely that construction of the Proposed Development will result in the temporary generation of noise and vibration, both from any construction activities taking place on the Site itself such as demolition, earthworks and the construction of the new buildings, and noise from construction traffic travelling on the nearby roads.
- 8.10 The potential likely significance of any effects from the construction phase will depend primarily on the type of activity being undertaken, which dictates the level of noise and/or vibration it produces, the distance of the activity from the nearby sensitive receptors, and the duration of the activity. In the case of peak construction traffic noise, the existing road traffic flows will also be considered.
- 8.11 Temporary adverse vibration effects are only likely to be associated with the construction phase of the Proposed Development where piling or certain types of ground compaction methods are employed and will occur in close proximity (typically less than 100m) from the receptors. Where specific information is available that indicates that these methods are to be employed, for example by the historic landfill site where high-energy impact compaction will be carried out, the potential vibration effects associated with that activity will be assessed specifically. Where these activities do not form part of the proposed construction method, vibration effects would be scoped out of the assessment.

Completed Development

- 8.12 The potential likely significance of effects during the operational phase of the Proposed Development will depend primarily on the type of source being considered, which are typically assessed in different ways, and the distance of the source from the nearby sensitive receptors, together with the influence of any intervening obstacles such as buildings or landscaping.
- 8.13 The permanent noise effects from the operation of the Proposed Development on existing and future noise sensitive receptors will be considered. The noise sources are anticipated to comprise:

- Noise from fixed building services plant serving the various Proposed Development buildings;
- Changes in road traffic noise on the local road network resultant from the Proposed Development;
- The impact of cars and other vehicles using the internal access roads where this is likely to have a significant effect on surrounding receptors;
- Noise from deliveries and servicing for the uses within the Proposed Development; and
- The noise impact from the proposed schools in the design, due to noise from outdoor play/sport areas and mechanical plant.

8.14 The suitability of the Site for the proposed noise sensitive uses being introduced as part of the Proposed Development will be assessed and will form an Appendix to the ES chapter.

Cumulative Assessment

8.15 Cumulative noise effects arising from interaction of the Proposed Development with other identified cumulative schemes will be assessed qualitatively, using all relevant publicly available information relating to the pertinent schemes. The exception to this is the operational road traffic noise assessment which will include committed cumulative developments and therefore inherently consider cumulative effects. A separate cumulative road traffic noise assessment will therefore not be presented within the ES Chapter.

Non-Significant Effects

Construction

8.16 Ground compaction will be undertaken in certain areas of the Site. However as indicated above, for locations where there are no piling works or vibratory ground compaction associated with the Proposed Development within 100m of the receptors, then it is proposed that no assessment of construction vibration effects will be undertaken as there are unlikely to be any significant adverse effects.

Completed Development

8.17 It is not anticipated that the Proposed Development will introduce any new sources of vibration, therefore it is proposed that the assessment of vibration effects associated with the completed Proposed Development will not be assessed.

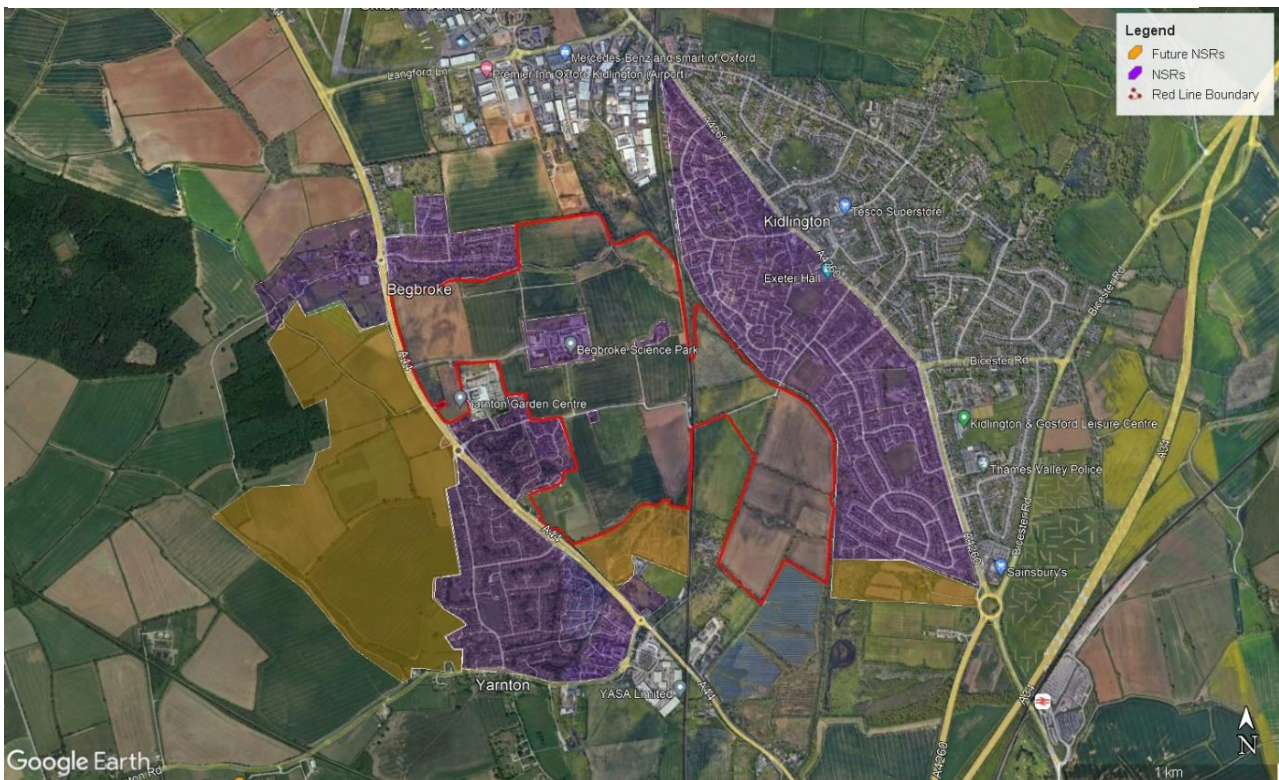
Assessment Methodology

Study Area and Spatial Scope

8.18 With regard to noise and vibration effects (outside of road traffic noise), the study area includes the nearest Noise Sensitive Receivers (NSRs) as shown in Figure 8.3. The majority of these NSRs border the Site and, due to their close proximity to Proposed Development works, are expected to represent the worst affected receptors from the Proposed Development.

8.19 The geographical scope of effects associated with road traffic will be based on the extent of the road network covered by the Transport Assessment and where increases of road traffic noise of more than 1 dB are anticipated.

Figure 8.3: Nearest existing noise and vibration sensitive receptors (indicative)



NOTE: due to scale of image some on site receptors do not appear in the figure.

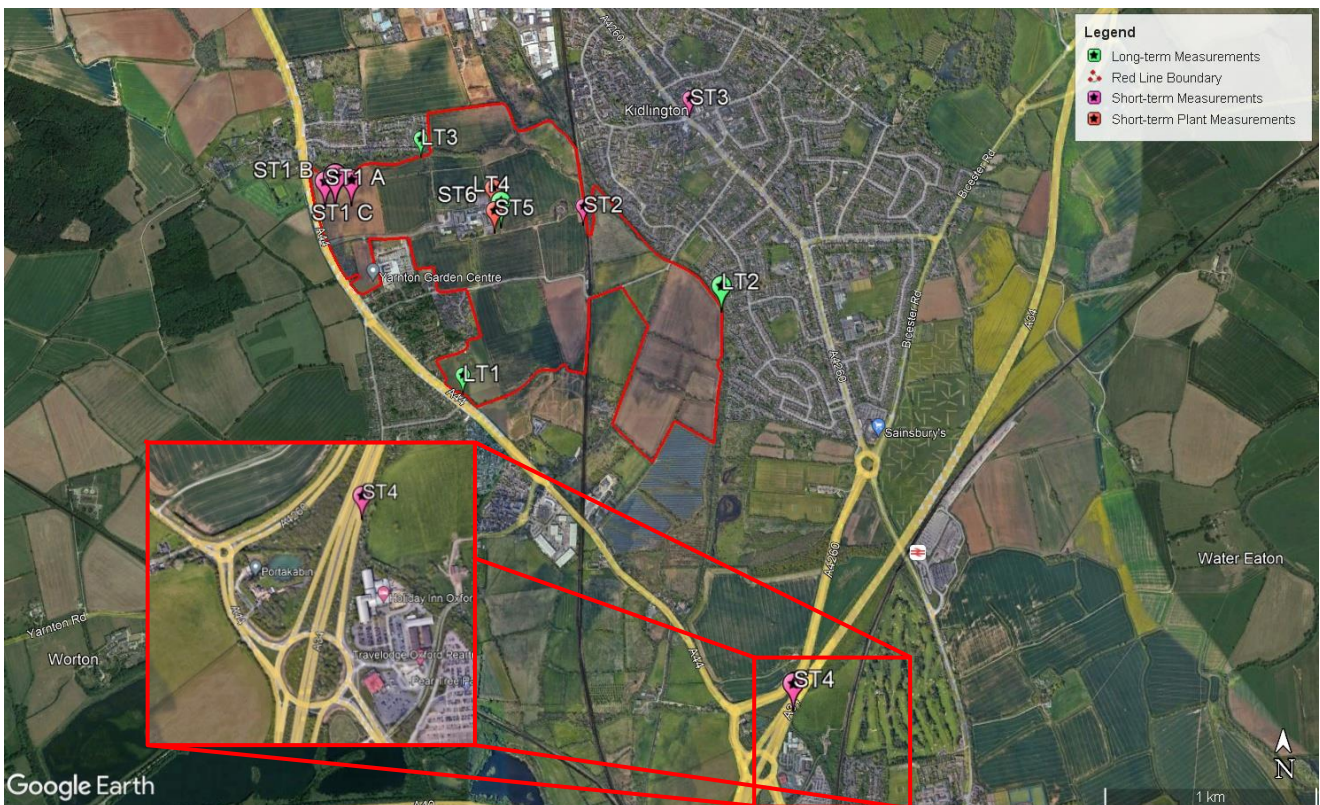
Baseline Assessment

8.20 The prevailing baseline noise environment was established through a baseline survey which was undertaken on the week of 19th September 2022, in accordance with BS 7445: 2003⁴⁵. The purpose of the survey was to determine the prevailing noise environment for the assessment of likely significant adverse effects and also to inform the assessment of the Site's suitability for the proposed noise sensitive uses within the Proposed Development. Long-term (24 hour, continuous, unattended) and short-term (15 minutes to 1 hour, attended) measurements were undertaken to assess the existing sound climate in the area. The measurement locations are described below, and illustrated in Figure 8.4:

- Long Term (LT)1 – 24-hour measurement to capture noise levels from the A44 and from the Shell petrol station.
- LT2 – 1-hour measurement to capture noise levels on the eastern boundary of the Site near the residential noise sensitive receivers.⁴⁶
- LT3 – 24-hour measurement to capture noise levels on the northern boundary of the Site near the residential noise sensitive receivers.
- LT4 – 24-hour measurement to capture levels from the mechanical plant items on the eastern side of Begbroke Science Park (for site suitability assessment).
- Short-term (ST)1 A, B, C – 15-minute measurements, to determine noise levels from the A44, at increasing distance from the road to verify the expected level of distance attenuation. Also representative of residential receptors to the north.
- ST2 – to capture noise levels from the passing trains on the railway line and give an indication of levels at the nearby residential receptors.

- ST3 – 15-minute measurements totalling 1-hour, in circuit style, to determine road traffic noise levels in Kidlington and from the A4260.
- ST4 – 15-minute measurements totalling 1-hour, in circuit style, to capture noise levels from the southern roads: A4260, A44, and A34.
- ST5 – 15-minute measurement to capture noise from rooftop mechanical plant located on the roof of the Impact and Shock Mechanics Laboratory at Begbroke Science Park (site suitability).
- ST6 – 15-minute measurement to capture noise from the extract fan on the side of the laboratory to the north east of Begbroke Science Park (site suitability).

Figure 8.4: Survey Locations Overview



Key Receptors

8.21 It is considered that the key noise sensitive noise and vibration receptors are all the residential dwellings surrounding the Site and sensitive receptors within the Site boundary, e.g. Begbroke Science Park. The anticipated likely receptor locations are:

- Fernhill Road to the north;
- Dwellings and potential canal boat moorings to the east of the railway line in the vicinity of Harts Close/Osbourne Close, Cherry Close/Lock Crescent; and
- Dwellings bordering the western Site boundary (Broad Field Road/Woodstock Road).
- Sensitive operational uses within the Begbroke Science Park;
- Existing and future residential dwellings within the Site boundary, including:
- Those along Sandy Lane;

- Those along the A44; and
- Future residential receptors within and associated with cumulative schemes adjacent to the Site boundary.

8.22 With regard to receptors to construction vibration, as described previously, this will depend on the locations of any vibration generating activities and their proximity to any sensitive receptors. This will be confirmed as further information regarding the construction methods become available.

Assessment Approach

General Approach

8.23 The overarching approach to the identification and assessment of adverse noise effects is based on the relevant policy in the NPPF⁴⁷, the Noise Policy Statement for England (NPSE)⁴⁸, and the associated Planning Practice Guidance on Noise (PPG:N)⁴⁹.

8.24 Fundamental to this approach are the aims that potentially adverse effects on health and quality of life resulting from noise from new developments should be mitigated and minimised and that likely significant adverse effects should be avoided.

8.25 Key to the identification of adverse and likely significant adverse effects are the concepts of the Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL), introduced in the NPSE in 2010.

8.26 Current government policy does not include specific, quantified definitions of the LOAEL or SOAEL. The NPSE does note that the SOAEL is likely to be different for different sources of noise, for different receptors and at different times. Typically, thresholds to represent the LOAEL and SOAEL are taken from recognised guidance such as relevant British Standards, Regulations or research and guidance produced by the World Health Organisation⁵⁰, as well as accepted thresholds previously defined for other, similar, schemes.

Construction

8.27 Calculation of the magnitude of both noise (and where applicable vibration) will be based upon the methods contained within BS 5228-1:2009+A1:2014 'Noise and Vibration Control on Construction and Open Sites Part 1 - Noise' and BS 5228-2:2009+A1:2014 'Part 2 - Vibration' as far as reasonably practicable. Construction noise predictions will be made based on available indicative information regarding the proposed construction methods and programme, and the guidance on the prediction of construction noise given in BS 5228-1. Significance criteria for construction noise will be based on the thresholds described in Annex E of the standard.

8.28 The noise exposure arising from changes in traffic flows on the existing road network during the construction phase will be calculated using the Department of Transport's 'Calculation of Road Traffic Noise' (CRTN, 1988) method, to derive the Basic Noise Level (BNL) at locations 10m perpendicular from the kerb. This enables a direct comparison to be made of the change in noise level resulting from the Proposed Development associated with particular sections of road. Significance criteria for road traffic noise will be selected by reference to Table 3.17 of Highways England Design Manual for Roads and Bridges, LA111 'Noise and vibration' (DMRB, 2020) ('DMRB Guidance')⁵¹.

Completed Development

- 8.29 Calculation of changes in road traffic noise levels resulting from traffic generated by the completed Proposed Development upon identified existing sensitive receptors will be undertaken. The calculations will be carried out in accordance with the Calculation of Road Traffic Noise ('CRTN') memorandum with changes in road traffic with be assessed in reference to the principles of the DMRB Guidance⁵¹.
- 8.30 The potential effects of noise from fixed plant and equipment associated with the Proposed Development will be considered in reference to BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'⁵². It is unlikely that detailed information regarding the plant will be available at the time of the assessment, it is therefore proposed to specify appropriate noise target levels. These levels will be based on surveyed ambient (L_{Aeq}) and background (L_{A90}) sound levels at the nearest sensitive receptors, the guidance contained in BS 4142:2014+A1:2019, BS 8233:2014⁵³ and any relevant local policies.
- 8.31 Where likely significant adverse effects from any of the aforementioned sources are identified, consideration will be given to appropriate mitigation measures in safeguarding amenity and ensuring compatibility with adjoining land uses.

Cumulative Effects

- 8.32 With regard to the assessment of changes in road traffic noise, all relevant committed developments will be included in the future baseline scenario and therefore the traffic noise assessments will inherently consider the cumulative effects of these schemes. As such, the residual effects of road traffic associated with the cumulative schemes and the Proposed Development will be the same as those reported for the operational phase assessment. As such, a separate cumulative road traffic assessment will therefore not be presented within the ES Chapter.
- 8.33 Cumulative effects from other noise effects during construction and operation of the Proposed Development (i.e. from construction activities and occupation of buildings) will take into account cumulative schemes which are located in very close proximity to the Site (i.e. within a 200m radius). Beyond this distance, noise attenuation is considered to be sufficiently low such that cumulative effects would not occur.

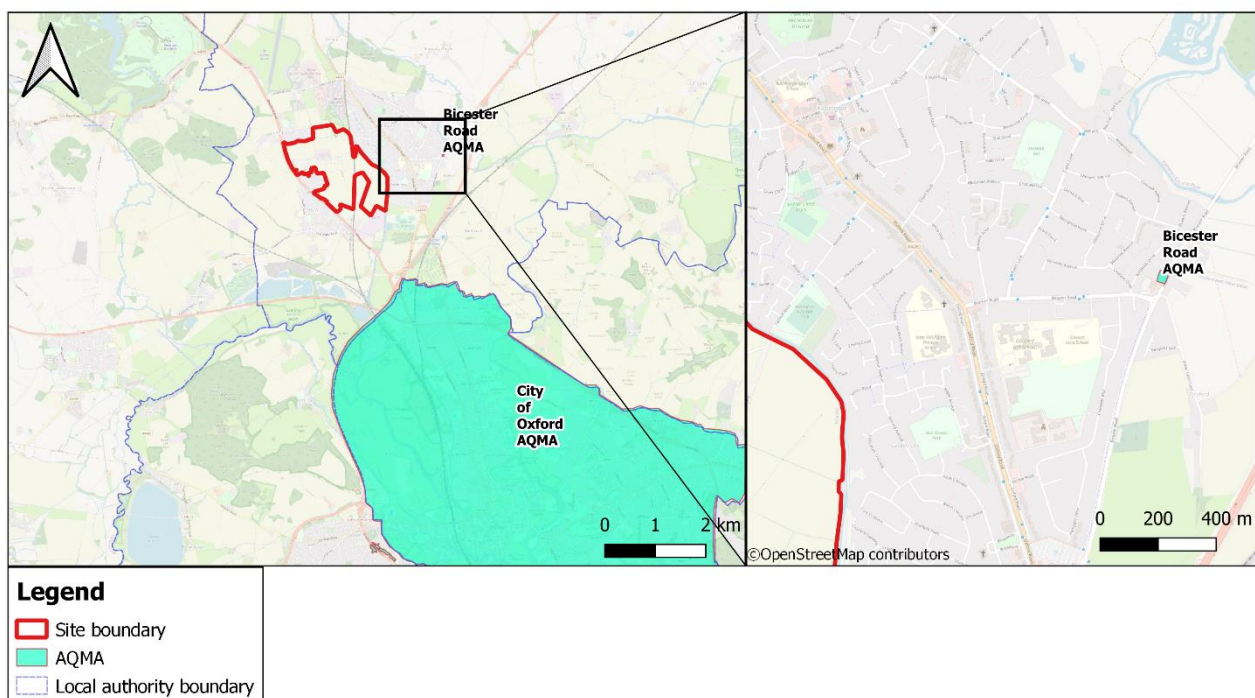
9 Air Quality

Baseline Conditions

Air Quality Management Areas

- 9.1 Air Quality Management Areas ('AQMA's') are declared by local authorities in areas where the UK air quality objectives ('AQOs') are not likely to be met⁵⁴. Whilst the Site is not within any AQMA, there are two AQMAs in the vicinity of the Site (Figure 9.1): the City of Oxford AQMA and the Bicester Road AQMA.
- 9.2 The City of Oxford AQMA covers the entirety of the City of Oxford, circa 1.5km to the south the Site, was declared due to exceedances of the annual mean nitrogen dioxide (NO₂) objective with road transport cited as the primary source of emissions. Bicester Road AQMA covers several properties on Bicester Road, approximately 1km east of the Site was also declared due to exceedances of the annual average NO₂ objective. Any additional traffic along roads within these AQMAs has the potential to negatively impact air quality within them.

Figure 9.1: Air Quality Management Areas in the vicinity of the Site

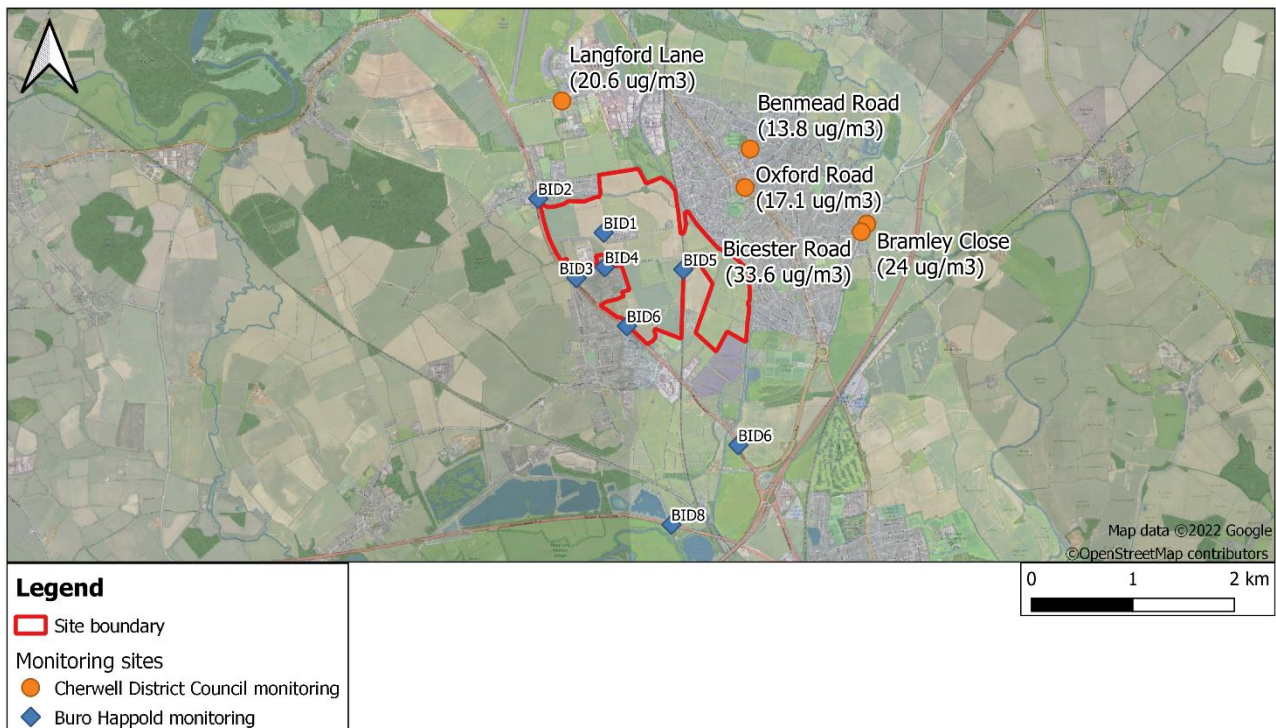


Local Air Quality Monitoring

- 9.3 CDC carries out air quality monitoring across the district. The monitoring sites closest to the Site are presented in Figure 9.2, which also displays the recorded 2019 annual average NO₂ concentration at each site⁵⁵. All monitoring sites within the vicinity of the Site recorded concentrations in compliance with the annual average AQO of 40 µg/m³.

- 9.4 There are no automatic air quality monitoring sites that monitor particulate matter within CDC. In addition, there are no particulate matter monitoring sites within neighbouring local authorities that are likely to be representative of on-site conditions.
- 9.5 To help determine baseline conditions, as well as to ensure the accuracy of dispersion modelling, Buro Happold has begun a programme of site-specific air quality monitoring at key locations in the vicinity of the Site (shown in Figure 9.2). Non-automatic diffusion tubes are used to carry out the monitoring, providing 4-week average NO₂ concentrations. Monitoring commenced in August 2022 and shall be carried out for six months. Data shall be adjusted to the 2019 baseline year following Defra LAQM TG22 guidance⁵⁶ and presented in the ES.

Figure 9.2: CDC and Buro Happold Air Quality Monitoring Locations



Local Pollution Sources

- 9.6 Whilst the Site is located approximately 2km south of Oxford Airport, aircraft emissions are unlikely to have a significant impact in terms of on-site pollutant concentrations. This is because local air quality at ground level remains largely unaffected by aircraft emissions that take place above 3,000 feet owing to the effective dispersion and reduction in concentrations of such emissions. Typically, the main air quality impact from airports arises from ground level transport to and from the airport and AQMAs have been designated in the vicinity of the Site owing to road transport emissions. Notwithstanding, aircraft emissions can contribute to local background pollutant concentrations which will be accounted for within the assessment.

Background Concentrations

- 9.7 Background concentrations are the concentrations of pollutants in an area in the absence of any local sources. Defra provides modelled background air pollution data for NO₂ and particulate matter (PM₁₀ and PM_{2.5}) for each 1km-by-1km OS grid square⁵⁷. The Site falls within nine grid squares. The average modelled background concentration over all of these grid

squares is presented in Table 9.1. Background concentrations for all pollutants are significantly below their relevant annual average AQOs.

Table 9.1: Defra modelled 2019 background concentrations

Pollutant	2019 modelled background concentration (average of all grid squares the Site is within, $\mu\text{g}/\text{m}^3$)
Nitrogen dioxide (NO_2)	11.8
Coarse particulate matter (PM_{10})	15.5
Fine particulate matter ($\text{PM}_{2.5}$)	10.4

Future Baseline

- 9.8 It is anticipated that emissions from vehicle exhausts will reduce in the future as the vehicle fleet transitions to a higher proportion of electric vehicles, as well as vehicles with improved emission abatement. Therefore, emission of NO_2 per vehicle is likely to decrease in the future. However, emissions of particulate matter – especially $\text{PM}_{2.5}$ – are likely to remain the same or even increase due to this transition, as electric vehicles emit fine particulate matter from break and tyre wear as well as resuspension of fine dust particles on the road⁵⁸. Reasonable worst-case assumptions shall be used when projecting future baseline traffic emissions.
- 9.9 Background air quality is expected to improve in the future due to a number of factors, including technological improvements and national and international policies aimed at reducing emissions.

Assessment Scope

Potential Significant Effects

Construction

- 9.10 The potential for likely significant effects as a result of the construction of the Proposed Development will be addressed in the assessment by considering the following:
- Effects from dust and PM_{10} emissions generated during the construction phase, including from earthworks and trackout; and
 - Effects of emissions from construction traffic, in particular heavy-duty vehicles associated with construction works.

Completed Development

- 9.11 The potential for likely significant effects as a result of the operation of the Proposed Development will be addressed in the assessment by considering the following:
- Effects of emissions from road traffic on human health and ecological receptors generated as a result of the operation of the Proposed Development; and
 - Effects associated with emissions from any on-site combustion plant/energy centre.

Cumulative Assessment

- 9.12 Cumulative effects will be considered within the construction dust assessment for the cumulative schemes for which there is demolition, earthworks and/or construction ongoing over the same time period as for the Proposed Development, with the potential to impact ecological integrity, human health and/or amenity for the same receptors. It is proposed that any cumulative schemes that do not have concurrent construction with the Proposed Development will be scoped out of the construction dust assessment.

Non-Significant Effects

Construction

- 9.13 Experience of assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) and on-site traffic suggests that they are unlikely to have a significant impact on local air quality. Therefore, it is proposed that the impact from NRMM emissions is scoped out of assessment in the ES.

Completed Development

- 9.14 There are no existing significant odour sources that are likely to impact the amenity of users of the Proposed Development. This is assuming that the historic landfill within the Site will remain in situ and will be subject to an engineering cover system. In addition, the current development proposals do not include any proposed land uses that are likely to generate any significant odour emissions. Therefore, it is proposed that the assessment of odour is scoped out of the assessment.
- 9.15 It is proposed that emissions from the Didcot and Chester Railway line, which runs through the Site, are scoped out of any dispersion modelling. The line is not identified in Defra Local Air Quality Management technical guidance (TG22) as having heavy traffic of diesel passenger trains; therefore, it is not anticipated to be a significant source of pollutant emissions. Nonetheless, an air quality monitoring station has been located adjacent to the railway line in order to determine the contribution from this source to on-site pollutant concentrations, and these monitoring results will be reported in the ES.

Cumulative Assessment

- 9.16 Traffic generated by relevant cumulative committed developments will be inherently included within traffic data for the future scenarios. Therefore, cumulative impacts will be assessed inherently within the operational and construction assessments, as opposed to being assessed explicitly in a separate cumulative assessment scenario.

Assessment Methodology

Study Area and Spatial Scope

- 9.17 During the construction phase, sensitive receptors may be affected by construction activities up to 350m from the Site boundary and within 50m of roads used by construction traffic up to 500m from the Site access.

9.18 In the operational phase, the spatial scope will be determined by the scale of emissions arising from the operation of the Proposed Development. Air quality impacts will be assessed in proximity to any road links on which there is an increase in traffic volume resulting from the Proposed Development that exceeds the criteria outlined in Institute for Air Quality Management (IAQM) guidance⁵⁹. The impact from any proposed combustion plant that exceeds the emissions criteria outlined in IAQM guidance will also be assessed, which will consider any receptors in the area surrounding the emission stack(s).

Baseline Assessment

9.19 Baseline data will be gathered from the following key sources:

- CDC⁶⁰ statutory air quality annual status reports;
- Defra national air quality background maps⁶¹;
- Baseline traffic flows supplied by the appointed transport consultant, supplemented by Department for Transport counts⁶² where required; and
- 6-month baseline air quality monitoring using diffusion tubes.

Key Receptors

9.20 During the construction phase, human receptors are anticipated to include residential properties in Begbroke, Kidlington and Yarnton, including the properties adjacent to Sandy Lane and the A44 and future residential receptors. Rushy Meadows Site of Special Scientific Interest (SSSI) and other designated ecological sites within 200m of primary construction traffic routes will be considered as ecological receptors.

9.21 During operation, key human and ecological receptors will be considered at locations adjacent to roads links on which there will be a potentially significant change in traffic volumes due to the Proposed Development and/or with the potential to be impacted by new combustion plant serving the Proposed Development. It is anticipated that this will include, at a minimum:

- Human receptors: Properties adjacent to Sandy Lane, Yarnton Road, A4260 through Kidlington and the A44.
- Ecological receptors: designated ecological sites including Oxford Meadows Special Area of Conservation (SAC), Blenheim Park SSSI and potentially other sites depending on findings of traffic modelling in accordance with IAQM Guidance on Assessment of Designated Nature Conservation Sites⁶³ (see para. 9.30 for further details).

Assessment Approach

9.22 It is proposed that air pollutant concentrations in the area will be assessed to identify current baseline levels and to determine any constraints or impacts associated with the Proposed Development during both the construction and operational phases. A review and summary of existing local, regional, national and international policies and guidelines regarding air quality and planning will be provided.

9.23 The CDC Environmental Health Officer will be consulted to confirm detailed assessment methodology, specifically pertaining to model verification and monitoring results processing.

- 9.24 A qualitative assessment of dust and particulate impacts during the construction phase will be provided in accordance with IAQM construction guidance⁶⁴ to determine the likely impacts on sensitive receptors and the level of mitigation required to ensure significant adverse effects are not likely. The recommended mitigation measures determined to be necessary to minimise emissions will then be included into the Framework CEMP submitted with the ES.
- 9.25 The need to conduct detailed dispersion modelling of construction and operational traffic for each scenario will be determined using the criteria set out in the IAQM guidance⁶⁵. Where IAQM criteria are met, a quantitative assessment of impacts associated with operational and construction traffic on the surrounding road network will be undertaken using dispersion modelling software ADMS-Roads Extra. This will predict changes in concentrations of NO₂, PM₁₀ and PM_{2.5} at selected worst case receptor locations during the construction and operational phases. Emissions from operational energy plant will be assessed using the ADMS-5 dispersion model. The process contribution from the energy centre emissions will initially be compared to published screening criteria. Where necessary, this will then be added to baseline concentrations (including road traffic contributions) to determine total concentrations.
- 9.26 Modelled concentrations will be compared to UK Air Quality objectives and any exceedances will be highlighted. Significance levels will be reported using the criteria set out in the IAQM and EPUK air quality planning guidance.
- 9.27 Whilst the Site is not within an AQMA, the risk of exposure to poor air quality will be considered across the Proposed Development due to the proximity to major roads. The modelling study will be used to ascertain concentrations of key pollutants across the Site and the concentrations will be compared to both UK Air Quality objectives.
- 9.28 As a reasonable worst-case scenario approach, it shall initially be assumed that there will be no change in background concentrations from existing levels. If this leads to predicted significant impacts consideration will be given to Defra's projected improvements in background air quality conditions for future years.
- 9.29 Consideration will also be given to the potential for the Sandy Lane bridge to be used by public transport as well as pedestrians and cyclists. Where appropriate, the future baseline will make reasonable worst case assumptions regarding the use of motor vehicles on specific road links.
- 9.30 An assessment of air quality impacts at designated ecological sites will be undertaken in the event that operational traffic exceeds 1,000 AADT⁶⁶ on roads within 200m of designated sites. Where this threshold is met, an assessment based on the IAQM Guidance on Assessment of Designated Nature Conservation Sites will be provided. This will include an assessment of the potential impact on nitrogen and acid deposition critical loads as well as ambient NO_x and ammonia (NH₃) concentrations (critical levels) where necessary.
- 9.31 Mitigation measures for both the construction and operational phases of the Proposed Development will be dependent on the level of risk and significance of the impacts. Construction mitigation will apply IAQM guidance and operational mitigation measures will follow industry best practice and will be informed through professional experience and relevant guidance. In line with CDC local planning policy, damage costs will also be presented following Defra's air quality damage costs guidance.

10 Climate Change and Greenhouse Gases

Baseline Conditions

- 10.1 The Site currently consists largely of agricultural land and the existing Begbroke Science Park. For the agricultural component of the Site, as there are few buildings on the Site, greenhouse gas (GHG) emissions associated with the agricultural land use are likely to be minimal and will therefore be assumed to be zero for the purposes of the assessment. The existing Begbroke Science Park will have GHG emissions associated with it resulting from operational energy use, operational water consumption, and operational transport. These will be estimated in the baseline section of the Climate Change and Greenhouse Gases ES Chapter utilising data on current GHG emissions or estimates made based on floor area and appropriate benchmarks, where information is not available.
- 10.2 In relation to climate change resilience, a baseline risk assessment will be carried out based on past and present climatic conditions, based on Met Office data.

Future Baseline

- 10.3 If the Proposed Development were not to go ahead, as the Site largely consists of agricultural land, it is likely that GHG emissions will remain fairly constant or see a slight decrease over time. Future development at the Begbroke Science Park may lead to minor increases in emissions but there are not considered likely to be significant.
- 10.4 The future baseline scenario will consider how the GHG emissions associated with the existing land uses on the Site are likely to change in the future. For comparison, an assessment period of 60 years is proposed as per the principles set out in BS EN 15978. This is based on the typical expected service life of the Proposed Development. The total GHG emissions will be estimated to 60 years after completion of the Proposed Development.
- 10.5 For climate change resilience, the assessment of the future baseline is inherently integrated into the risk assessment approach. This will be based on the latest available Met Office UK Climate Projections 2018 (i.e., UKCP18).

Assessment Scope

Potential Significant Effects

- 10.6 The Applicant is committing to achieve net zero carbon development by 2035. GHGs are gaseous compounds that have been identified as contributing to a warming effect in the earth's atmosphere. The primary GHG of concern with respect to the Proposed Development is carbon dioxide (CO₂) which is emitted from combustion sources such as vehicular transport and heating and energy plant. Other GHGs such as methane also contribute to climate change, and these will be accounted for based on their Global Warming Potential (GWP). The combined effect of all GHG emissions will be presented as carbon dioxide equivalent (CO₂e).

Construction

10.7 Sources of GHG emissions during the construction phase are as follows:

- GHG emissions associated with site clearance and waste removal;
- Embodied GHG emissions associated with the extraction and manufacturing of building materials (i.e., the product stage); and
- GHG emissions associated with the transport of materials/waste to and from the Site and construction and installation (i.e., the construction process stage).

10.8 In relation to climate change resilience and adaptation, as the construction phase is likely to be relatively short-term in relation to the overall lifecycle of the Proposed Development, climatic conditions are not likely to deviate significantly from the baseline conditions. Therefore, it is considered that a construction phase assessment will not be considered within the climate change resilience risk assessment.

Completed Development

10.9 Sources of GHG emissions during the operational stage are as follows:

- GHG emissions associated with maintenance, repair, replacement and refurbishment within the buildings (i.e., the embodied carbon);
- GHG emissions associated with the operational energy requirements for the day to day running of the buildings (i.e., heating, cooling, lighting etc.);
- GHG emissions associated with operational water consumption for the Proposed Development;
- GHG emissions associated with operational transport (i.e., deliveries, staff and occupant journeys); and
- GHG emissions associated with end-of-life demolition.

10.10 In relation to climate change resilience and adaptation, the risk assessment shall consider a list of likely climate change risks set out in the C40 Cities Climate Change Risk Assessment Guidance (2018)⁶⁷.

Cumulative Assessment

10.11 Unlike other environmental effects that will be assessed in the ES, effects from GHG emissions are not localised but contribute to the global atmospheric concentration of GHG's and consequently contribute to the global climate change effect. The Proposed Development should be viewed, rather, in the context of developments and construction projects globally as it contributes to a global climatic effect. Therefore, an assessment of the cumulative effects of GHG emissions from the Proposed Development with other nearby committed developments is not proposed to be carried out. As there are GHG emissions associated with almost all new developments globally, it may be stated that cumulative effects are significant.

Non-Significant Effects

Completed Development

10.12 It is proposed that the following aspects will be scoped out of the operational phase assessment for the Proposed Development:

- Operational waste: The opportunities for decisions to significantly influence the reduction of GHG emissions associated with operational waste are low as it is highly dependent on occupant behaviour and waste processing at the waste planning authority scale. As such, emissions from the treatment and disposal of operational waste are proposed to be scoped out;
- Carbon sequestration of green infrastructure: GHG emissions associated with carbon sequestration of proposed green infrastructure will be low relative to total GHG emissions over the whole life of the Proposed Development, and therefore it is proposed that the offset benefits will not be quantified; and
- Beyond building lifecycle: GHG emissions associated with beyond building lifecycle stage cannot be guaranteed, for example, considering circular economy principles such as material and component re-use, therefore potential benefits will not be quantified and taken as an offset.

Assessment Methodology

10.13 The assessment of climate change through the ES shall focus on both greenhouse gas (GHG) emissions associated with the Proposed Development (i.e., climate change mitigation) and the effects of climate change on the Proposed Development itself (i.e., climate change resilience and adaptation). The assessment of effects associated with GHG emissions shall be carried out through the dedicated GHG emissions ES chapter, in line with the Institute of Environmental Management and Assessment (IEMA) Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance Second Edition (2022)⁶⁸.

Study Area and Spatial Scope

10.14 When considering the effects relating to GHG emissions, the sources of GHG emissions stated above within the Site boundary or directly relating to the construction and operation of the Proposed Development will be accounted for in the assessment.

Baseline Assessment

10.15 For the Climate Change and Greenhouse Gases ES Chapter, the baseline for the Proposed Development is defined as the current GHG emissions arising from activities and infrastructure within the Site boundary, in line with the IEMA Guidance (2022). As the only notable source of GHG emissions on the Site is the Begbroke Science Park, the GHG emissions associated with the operation of this building will be estimated as a point of comparison for the current and future baseline section of the ES chapter. This will also be estimated over a 60-year period for the future baseline scenario.

Key Receptors

- 10.16 The principal receptor is atmospheric GHG concentrations. As atmospheric GHG emissions are pushed closer towards their environmental limit, this indirectly triggers subsequent effects on the global climate system that contribute to climate change.
- 10.17 In line with IEMA Guidance, the sensitivity of the receptor (i.e., the global atmosphere) in relation to GHG emissions is always considered to be 'high', based on the value and vulnerability of the resource and irreversibility of the effect.
- 10.18 In relation to climate change resilience, the risk assessment shall consider a list of likely climate change risks set out in the C40 Cities Climate Change Risk Assessment Guidance. The main receptor when considering these risks is the Proposed Development itself and the residents/users of the Proposed Development.

Assessment Approach

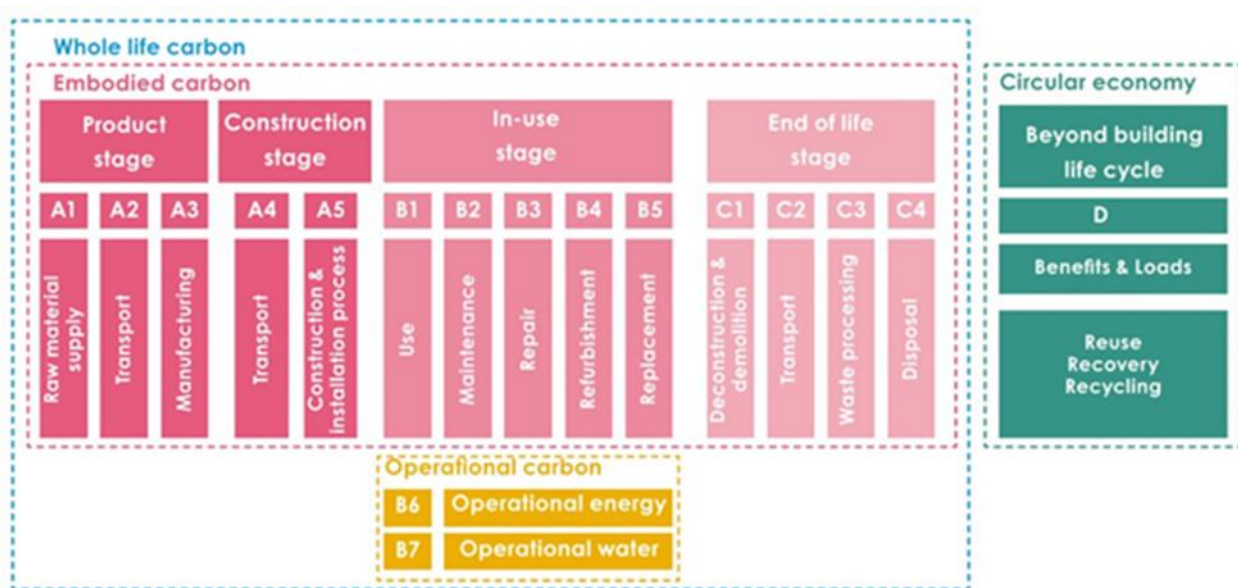
- 10.19 The assessment will quantify the GHG emissions from the Proposed Development over its lifetime. This will include GHG emissions during the construction and operational phase of the Proposed Development.
- 10.20 There is currently no standard methodology for quantifying GHG emissions within EIA. However, best practice will be drawn from the following sources:
- IEMA Guide to Assessing GHG emissions and Evaluating their Significance (IEMA, 2022)**Error! Bookmark not defined.**;
 - Royal Institute of Chartered Surveyors (RICS) Whole Life Carbon Assessment for the Built Environment (2017)⁶⁹; and
 - British Standard EN 15978:2011 Sustainability of construction works. Assessment of environmental performance buildings. Calculation method⁷⁰.
- 10.21 It is proposed that GHG emissions associated with the construction stage are estimated based on appropriate published benchmarks. The assessment of GHG emissions during construction will utilise the following approach:
- GHG emissions associated with the construction stage of the Proposed Development will be estimated by applying appropriate embodied carbon benchmarks based on floor area and building typology.
- 10.22 As the application will be submitted in outline, detailed design of the proposed buildings will not be available at the outline stage and, therefore, the assessment of the completed Proposed Development will be undertaken on a likely reasonable worst-case assumptions-based approach. The assessment of operational effects will utilise the following approach:
- GHG emissions associated with operational embodied carbon and end-of-life demolition will be based on appropriate published benchmarks. Where information is available from the sustainability and energy consultants on likely operational energy, and the utilities engineers on the likely operational water, carbon factors shall be applied to determine GHG emissions associated with these sources. Where this information is not available, appropriate published benchmarks shall be used.

- Where information on operational transport trip generation is available from the project's transport consultants, carbon factors shall be applied and assumptions on journey distances shall be made.

10.23 An assessment period of 60 years is proposed, as per the principles outlined in BS EN 15978. This is based on the typical expected service life of the operational Proposed Development. The total GHG emissions will be estimated to 60 years after completion of the Proposed Development.

10.24 The GHG emissions scope will align with the lifecycle stages defined as modules within BS EN 15978, with building elements included as per guidance within the RICS guidance on Whole Life Carbon Assessment for the Built Environment, as shown in Figure 10.1.

Figure 10.1: Diagram showing the stages of a lifecycle GHG emissions assessment, based on BS EN 159783.



10.25 The ES chapter shall provide a whole life carbon summary including all sources of GHG emissions assessed. Total estimated GHG emissions shall be compared to appropriate national and regional carbon budgets to illustrate the scale of GHG emissions associated with the Proposed Development. Significance of effects will be determined in-line with IEMA Guidance.

10.26 In line with the IEMA EIA Guide to Climate Change Resilience and Adaptation (2020), the assessment of climate change resilience and adaptation shall be assessed in the ES in the following two ways:

- Through a climate change resilience risk assessment, which will be appended to the alternatives and design evolution chapter of the ES; and
- Each technical ES chapter will assess how the effects of climate change are likely to change the significance of effects reported for that topic.

10.27 The climate change resilience risk assessment shall be carried out in line with the IEMA EIA Guide to Climate Change Resilience and Adaptation.

11 Biodiversity

Baseline Conditions

- 11.1 Information on baseline conditions has been obtained through a search of biological records data provided by the Thames Valley Environmental Records Centre ('TVERC') and field surveys conducted by BSG Ecology in 2018 and updated in 2021 and 2022.
- 11.2 There are no statutory designated ecological sites within the Site, however there are 16 within a 5 km radius vicinity of the Site, as shown in Figure 11.1. Rushy Meadows SSSI, designated for grassland flora and fauna, is the closest, located within approximately 10m of the north-eastern Site boundary. Oxford Meadow Special Area of Conservation ('SAC') and Pixey and Yarnton Meads SSSI are located approx. 1.8km south of the Site. There is one non-statutory designated site within the Site boundary – the Lower Cherwell Valley Conservation Target Area ('CTA'), which extends into the north-eastern corner of the Site. In addition, there are 17 other non-statutory designated sites and three areas of Ancient Woodland within a 2 km radius of the Site.
- 11.3 Habitats on the Site are shown in Figure 11.2. The Site is dominated by large arable fields which are of low ecological value, with field boundaries formed by hedgerows which are of ecological value and defined as a Habitat of Principal Importance ('HPI'). Areas of semi-improved grassland are present within the Site, including areas at Begbroke Science Park, on road verges on Sandy Lane and in fields in the east of the Site. Woodland corridors follow the Rowel Brook in the north and north-east of the Site and is also considered a HPI. In addition to this woodland, there are various mature and semi-mature trees within the Site, including at the Begbroke Science Park. Six ponds are present within the Site. Of these, the presence of great crested newt makes the pond at Begbroke Science Park an HPI. The other ponds within the Site do not contain great crested newt ('GCN') and are not considered HPIs.
- 11.4 Species surveys have identified the presence of three badger setts within the Site. Bat roosts are present in Begbroke Hill Farmhouse and an adjacent building within Begbroke Science Park, and a range of bat species use the hedgerow network within the Site for foraging and commuting. The pond within the Begbroke Science Park contains a small breeding population of GCN. Other protected species identified on-site include water vole (found in 2018 but not in 2021 or 2022), breeding birds (including Species of Principal Importance ('SPIs') such as skylark, red kite, and house sparrow), and reptiles. No evidence of dormouse, otter, white-clawed crayfish, or significant populations of wintering birds were identified from Site surveys and these are therefore considered likely to be absent from the Site. Brown hairstreak butterfly (a SPI) was found to breed at the Site, but based on habitat surveys, areas of the Site proposed for development do not have potential to support other terrestrial invertebrate assemblages of significant conservation value. The Site has potential to support some other SPIs such as hedgehog, brown hare, common toad, and farmland birds. Full details of all the surveys are set out below, with full methodologies and results to be appended to the ES chapter.

Figure 11.1: Designated Nature Conservation Sites

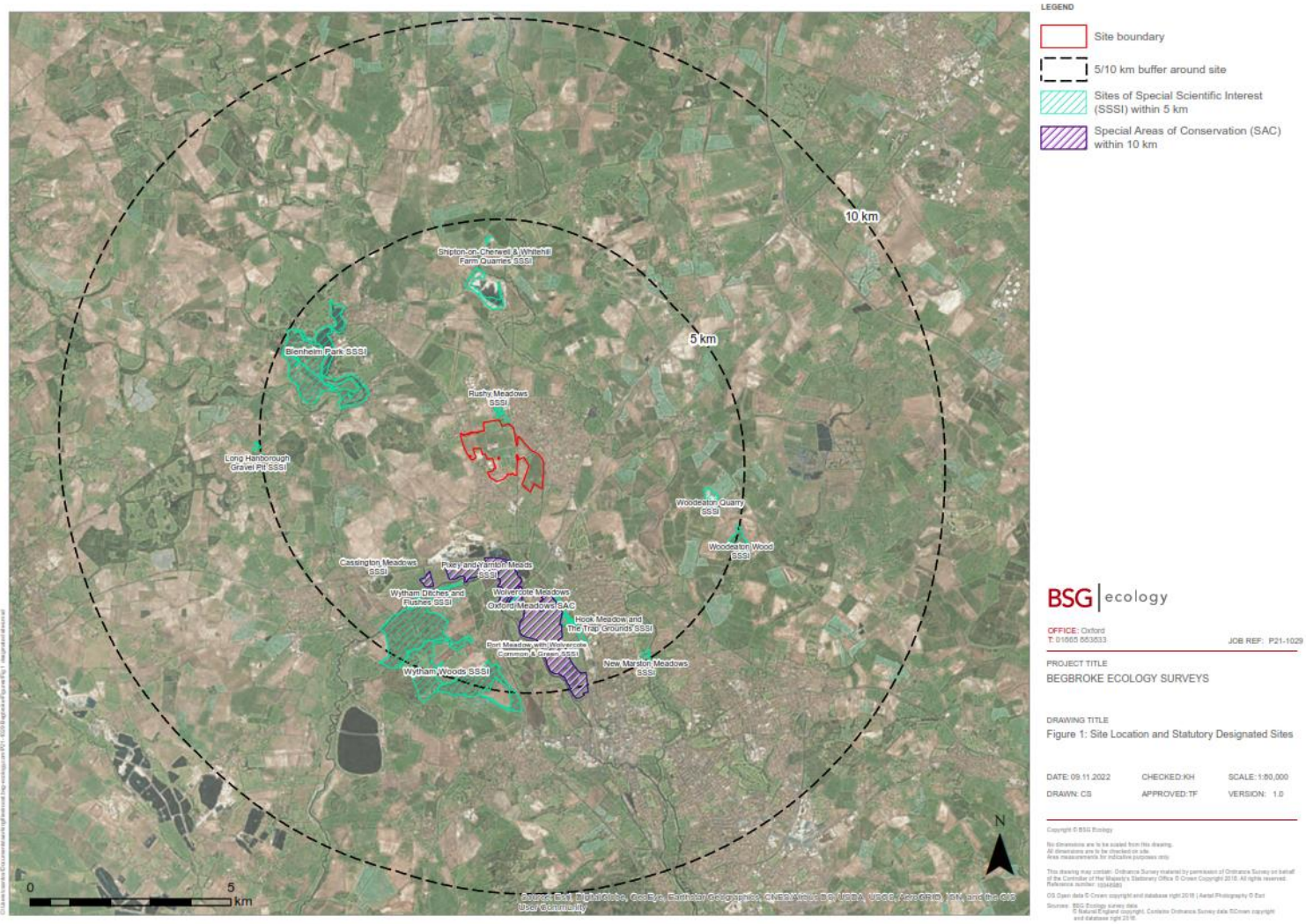
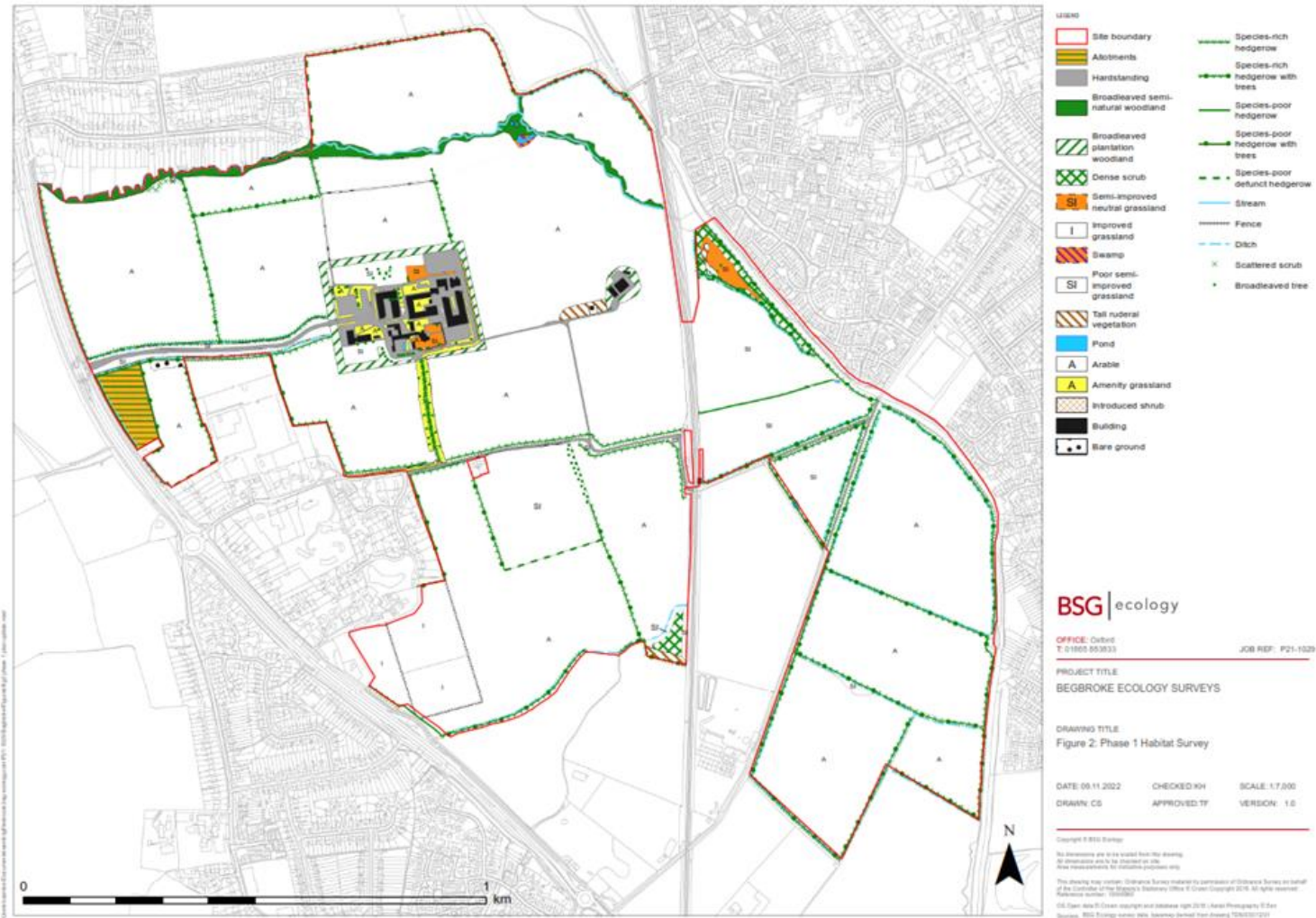


Figure 11.1: Phase 1 Habitat Survey Map



Future Baseline

11.5 The majority of the Site is in agricultural use, and, in the absence of development, is unlikely to see any significant change in land management or habitats present over forthcoming decades. There are two exceptions:

- An area of semi-improved neutral grassland in the north-east of the Site, which is becoming encroached by bramble scrub. This area is likely to succeed to dense scrub in the absence of management, reducing its botanical value and its suitability for reptiles (which are currently present).
- An area of around 0.8 ha of arable field within the north-east of the Site being converted to neutral grassland as a biodiversity offset scheme associated with separate development at Begbroke Science Park. There is scope within the Proposed Development to retain and appropriately manage this new habitat.

Assessment Scope

Potential Significant Effects

Construction

11.6 Potentially significant effects on ecology and nature conservation features of the Site during construction that will be considered in the ES are as follows:

- Impacts on designated ecological sites (statutory and non-statutory) from construction activities;
- Impacts on habitats (including HPis), including habitat loss from direct clearance or excavation works, and/or habitat degradation from pollution;
- Impacts on soils or vegetation by physical damage, soil compaction (resulting in changes in flora), and/or changes in hydrology resulting in the drying of wetland areas or reductions in local populations of wetland flora and fauna; and
- Impacts on local populations of protected and non-protected species from loss or changes in habitat, reduction in habitat connectivity, killing, injury or disturbance from construction works (including construction traffic movements, lighting, air quality, noise and vibration).

Completed Development

11.7 Landscaping and ecological habitat creation and enhancement will be implemented to achieve an overall biodiversity net gain on the Site, including creation of a new LNR and area for nature conservation. The Proposed Development will enhance retained habitats and create new habitats of higher ecological value including wetlands, ponds, species-rich grasslands, woodlands, orchards, native scrub and species-rich hedgerows. Potential likely significant effects on ecology and nature conservation features of the Site during operation that will be considered in the ES are as follows:

- Impacts on designated ecological sites from air pollution (resulting from increased traffic flows), changes in hydrological regime, pollution (inc. water, light etc.), and increased recreational pressures;

- Impacts on habitats from degradation associated with increased recreational pressures, aerial, noise and light pollution, and increased fragmentation from road traffic; and
- Impacts on species through killing, injury, disturbance and/or displacement from vehicle traffic, lighting, noise, recreational pressures, and predation from cats.

Cumulative Assessment

11.8 The assessment of cumulative effects will consider the same potential likely significant effects as identified for the Proposed Development (above) within the Zone of Influence ('Zol') for each ecology feature (see below).

Non-Significant Effects

11.9 The following ecological features are not expected to experience significant likely effects from the construction phase or the operational phase of the Proposed Development and are therefore proposed to be scoped out of further assessment in the ES:

- Habitats: arable land, poor semi-improved grassland, improved grassland; and buildings – due to these habitats being inherently of low ecological value and being widespread and common in CDC; and
- Species: dormice, terrestrial invertebrates (other than brown hairstreak) and wintering birds – due to likely absence from the Site and/or lack of significant conservation value of the Site for these species, based on surveys carried out to-date.

Assessment Methodology

Study Area and Spatial Scope

11.10 Direct impacts on habitats and species are likely to be limited to the Site. The Zol of the Proposed Development varies with the particular ecological feature being considered and is dependent on a variety of factors including, for example, value, sensitivity, home range, etc., of the feature being assessed and pathway, e.g., air pollution from traffic or water pollution within the wider drainage catchment. This may vary from 1 km up to 10 km for wider scale effects and will be defined in the ES.

Baseline Assessment

11.11 Baseline conditions will be established using information obtained from the ecological surveys conducted in 2018, 2021, and 2022 by BSG Ecology and through ecological desk study, comprising the following surveys:

- Phase 1 habitat survey;
- Hedgerow and botanicals;
- Otter;
- Badger;
- Bats;
- Dormouse;
- Breeding birds;
- Wintering birds;

- Reptiles;
- Invertebrates;
- White-clawed crayfish; and
- Great Crested Newt.

11.12 Survey and assessment scope has been, and will continue to be, discussed with and agreed by CDC, OCC, Natural England and the EA. Data on nutrient levels from soil sampling being undertaken on the Site by the soils consultant (see Chapter 13: Agricultural Land and Soils) will also be utilised.

Key Receptors

11.13 Only ecological receptors identified as being of ecological importance and likely to be affected by the Proposed Development will be scoped into the assessment of effects. The ecological receptors anticipated to be affected include the designated sites, habitats and protected or notable species recorded as being present during the surveys as described above.

Assessment Approach

11.14 The Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2019) ('CIEEM Guidance') sets out a methodology for the assessment of potential effects arising from development which will be followed. In addition, relevant legislation on protected species (such as, for example, the Wildlife and Countryside Act 1981) will be taken into account.

11.15 Consultation will be undertaken with CDC and relevant stakeholders (such as Natural England and the EA) to agree appropriate scopes for ecological surveys and mitigation strategies.

11.16 For all ecological features scoped into the assessment, the geographic importance of the feature will be assessed, based on the baseline information and on CIEEM Guidance. The geographic scale of the effect of the Proposed Development will be determined for each feature in turn (considering all of the effects taken together), i.e., site, local, district, regional or national level. Appropriate mitigation will be set out, and the residual effects of the Proposed Development, once mitigation has been taken into account, will be assessed and their geographic scale determined. The significance of residual effects will be determined with reference to the conservation status and established conservation objectives for features, and planning policy and legislation.

11.17 Mitigation measures would be 'embedded' within the Proposed Development through the retention of key existing habitats or features of value (wherever possible), built development layout, as well as carefully defined design principles of green/blue infrastructure, creation of new habitats, lighting, drainage and access. Where there are impacts remaining following the application of appropriate mitigation, these will be identified, and any necessary additional avoidance, mitigation and/or compensation measures described.

11.18 The assessment would include an assessment of BNG which would be undertaken in accordance with the latest Defra metric (v.3.1) and Natural England guidance published in 2021. The Proposed Development would seek to achieve net gains in biodiversity through a combination of on-Site measures and off-Site contributions as necessary. On-Site measures will include the enhancement of retained habitats and the establishment of new habitats.

11.19 The assessment would include the information required by CDC for them to undertake a Habitats Regulations Assessment ('HRA') as required under the Conservation of Habitats and Species Regulations 2017 (as amended), provided as an appendix to the ES chapter. The scope and format of this information will be subject to discussion with CDC.

12 Ground Conditions and Contamination

Baseline Conditions

- 12.1 The baseline conditions at the Site have been informed by publicly available data, a site walkover survey, an historical desk study report (Jubb, 2018)⁷¹, and site investigation reports on areas of the Site (Jubb, 2019⁷² and Hydrock, 2021⁷³). Additional information (in relation to Rushy Meadows SSSI, which is located to the north of the Site) is sourced from the CDC website (White Young Green Limited, 2018)⁷⁴.
- 12.2 The majority of the Site is in agricultural use, with farm storage barns located in the central area of the Site, and allotments are located in the central west of the Site. A section of the agricultural land in the southeast of the Site is currently used as a poultry and deer farm. A historical landfill (approximately 5.2 ha) (filled with inert/industrial waste) is present in the central-south of the Site. A foul water pipe runs beneath the Site on a north west to south east alignment. A medium pressure gas pipe runs around Begbroke Science Park and in a south west direction from Begbroke Science Park towards Sandy Lane. An abandoned sewer is located beneath the south east of the Site, to the north west of the Cherwell Valley Railway Line.
- 12.3 Begbroke Science Park has a number of tenancies that necessitate the storage of chemical and hazardous waste. There are a number of backfilled gravel pits within the Site and a fuel station is present adjacent to the south west corner of the Site. An underground sewer crosses the Site in a north to south direction, to the west of Begbroke Science Park (joining a pumping station in the north) and either side of the landfill area.
- 12.4 The nearest surface water features are Rowel Brook, which forms the northern boundary of the Site flowing west to east towards the Oxford Canal. A small watercourse (understood to be Thrupp Ditch), runs through Rushy Meadows SSSI to the north of the Site converging with Rowel Brook on the central-northern edge of the Site and a small stream/ditch is located in the south of the Site. One abstraction consent is located 960m to the north east of the Site. Further details are provided in Chapter 13: Water Resources and Flood Risk.

Site History

- 12.5 Historical mapping indicates that much of the Site has never been developed and has been utilised for agricultural use from the earliest available mapping to the present day.
- 12.6 A number of gravel pits were located within the central-southern part of the Site to the south of Sandy Lane, known as Sandy Lane Pits. Following completion of the gravel extraction operations, these pits were used as landfill and were backfilled by the early 1980s. The eastern most Sandy Lane Pit was shown as a refuse pit until 1978 and remains undeveloped and backfilled slightly above the surrounding ground level.

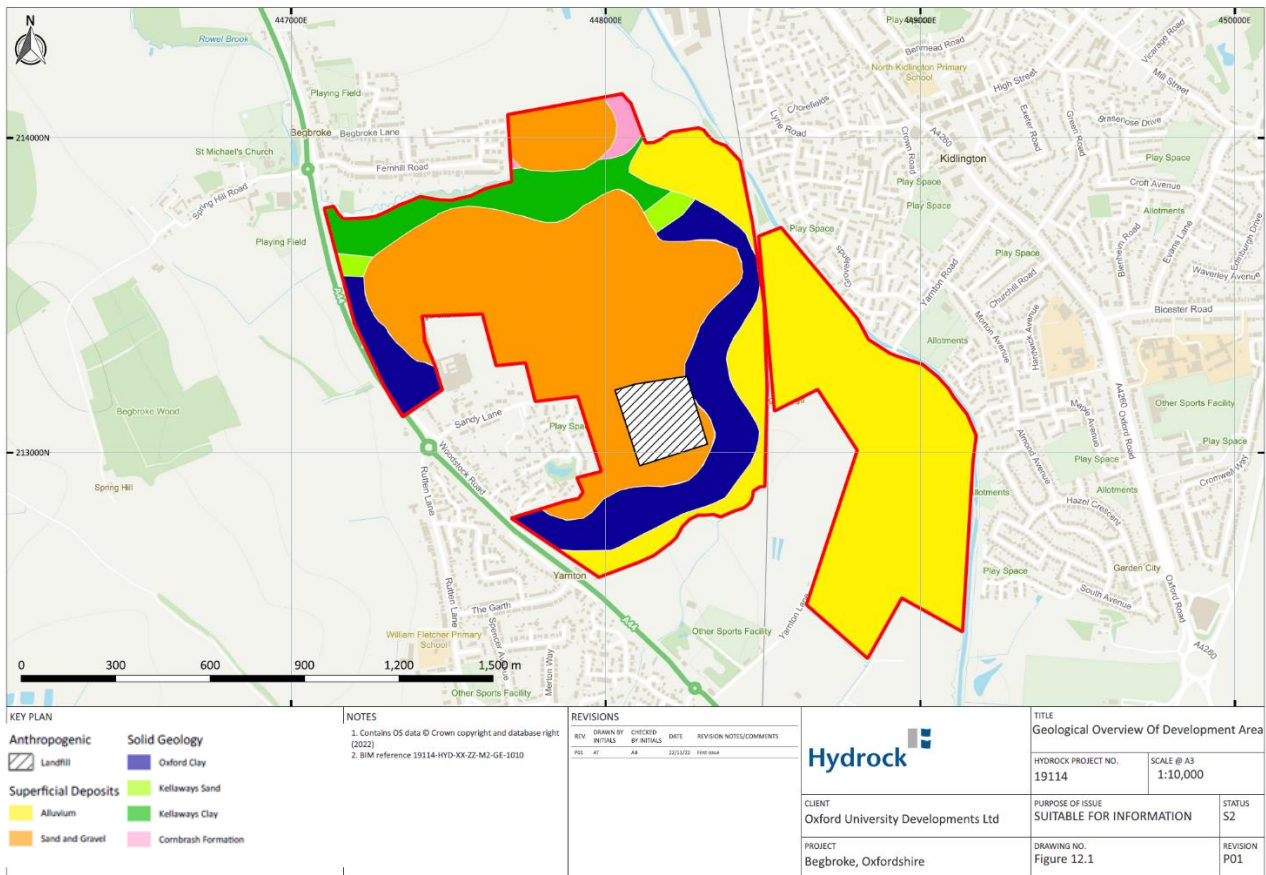
Geology

- 12.7 The British Geological Survey (BGS) shows the geology of the area to be:

- Superficial Geology, comprising:
 - River Terrace Deposits (Summertown-Radley Sand and Gravel Member) in the central / northern plateau area of the Site;
 - Alluvium in the east of the Site; and
 - 1st River Terrace Deposits anticipated to underlie the Alluvium.
- Solid Geology, comprising:
 - Oxford Clay Formation; comprising a dark grey mudstone; over
 - Kellaways Sand Member comprising interbedded silty sand and mudstone; over
 - Kellaways Clay Member comprising grey mudstone; over
 - Cornbrash Formation comprising bluish grey limestone weathering to olive or yellowish brown.

12.8 This is illustrated in Figure 12.1.

Figure 12.1: Geology of the Site



12.9 The EA classifies the River Terrace Deposits, Alluvium, Cornbrash Limestone Formation and Kellaways Sand Member, as Secondary A Aquifers. The Kellaways Clay Member and the Oxford Clay Formation are classified as unproductive strata. The Site is not located in a groundwater Source Protection Zone.

Ground Conditions

- 12.10 Historical ground investigation was undertaken by Jubb in 2019 on and in the vicinity of the historic landfill. This identified topsoil to depths of between 0.20 to 0.25m below ground level ('bgl'), overlying River Terrace Gravels to depths of between 2.20m bgl and 6.80m bgl, and Oxford Clay Formation. Groundwater was present in monitoring wells at between 2.70m bgl and 6.40m bgl. Slightly elevated levels of heavy metals were identified in localised groundwater samples, with concentrations of arsenic and rare naphthalene in soil samples from the River Terrace Gravels.
- 12.11 Additional site-wide ground investigation work will be undertaken in accordance with best practice guidance, as set out below.
- 12.12 An Unexploded Ordnance ('UXO') screening exercise has been undertaken and indicates that no further assessment is required with regard to UXO.

Future Baseline

- 12.13 Based on the available information, it is considered that the existing baseline conditions would not materially change in the absence of the Proposed Development.

Assessment Scope

Potential Significant Effects

Construction

- 12.14 Construction phase works will comprise site levelling and remedial works to the historic landfill site. It is intended that the historic waste within the landfill site will remain in situ, with a 'cap and cover' process to be followed. This will comprise the installation of an engineered cover system that will break the surface layer and subsoil, utilise imported subsoil/topsoil and be compacted. These works will extend beyond the landfill boundary and bring this area of the Site to a suitable condition for use as green open space.
- 12.15 The potential significant effects during the construction phase are likely to include:
- Potential effects on human health (on-site and off-site) from exposure to contamination and/or ground gas associated with historical and current land use;
 - Potential for increased mobilisation of chemical contaminants into surface water and/or groundwater from site works (excluding historic landfill site);
 - Potential for mobilisation of contaminants from compaction works to historic landfill site; and
 - Temporary alteration of groundwater flow regime in relation to the baseflow to surface water features.

Completed Development

- 12.16 The potential significant effects during the operational phase are likely to include:

- Potential effects on human health (on-site and off-site) from exposure to contamination and/or ground gas associated with historical and current land use;
- Potential for increased mobilisation of chemical contaminants into surface water and/or groundwater;
- Alteration of groundwater flow regime in relation to the baseflow to surface water features;
- Potential degradation of plastic pipes from contaminants;
- Potential permeation of water supply pipes from contaminants;
- Potential effects to new buildings (primarily foundations), from any aggressive ground conditions; and
- Potential effects to proposed new landscaped areas from the release of any potential contamination.

Cumulative Assessment

12.17 With regard to ground conditions and the potential for cumulative effects of the Proposed Development in combination with the cumulative schemes. It is considered that any cumulative effects are likely to be localised to the Site and there are unlikely to be any cumulative effects across all sites as contaminated land is assessed to a common standard. As such, it is proposed that an assessment of cumulative effects are scoped out of the ES Chapter.

Non-Significant Effects

12.18 The potential effects of the following aspects of assessment are considered likely to be insignificant and it is proposed that they will be scoped out of the ES chapter:

- Impacts on ground conditions from spillages, soil erosion, generation of suspended solids during the construction phase, which would be mitigated through normal construction site practice through adherence to the CEMP, and a Materials Management Plan, i.e. a mechanism by which developers can comply with EA regulations for excavated ground materials.
- The completed Proposed Development has the potential to generate adverse effects from localised spillages of fuel, which may be carried to surface watercourses and underlying groundwater through surface run-off and leaching through the soil profile. However, the surface water drainage strategy will be developed to minimise the likelihood for contaminants reaching surface water bodies and to limit infiltration and permeation to groundwater.

Assessment Methodology

Study Area

12.19 The spatial extent of the study area is the Site and the immediate surrounding area, defined as land within close proximity to, or bordering the relevant part of the Site (i.e. less than 250m from the Site boundary) and which has the potential to be a contaminant source and there is a potential pathway for contaminant migration, which may affect or be affected by the Proposed Development.

12.20 The inclusion of a 250m buffer is based on the 'Guidance for the Safe Development of Housing on Land Affected by Contamination' (NHBC and EA, 2008⁷⁵). This buffer is reasonable in the context of the Proposed Development considering the distance over which contamination can migrate, and the nature of the current development in the vicinity of the Site (with limited, and identifiable contaminant sources).

Baseline Assessment

12.21 A Phase 1 Desk Study and Phase 2 Ground Investigation will provide the baseline context of the ES Chapter to identify potential 'source-pathway-receptor' contaminant linkages. Potential geotechnical risks will also be assessed. From this, the EIA will assess the environmental impacts of the Proposed Development in terms of the ground conditions. This will consider naturally occurring geological conditions and any man-made deposits, together with information on existing chemical contamination and geotechnical features arising from the former and existing uses of the Site. The hydrogeological regime, comprising the groundwater in any permeable deposits beneath the Site, and the hydrological regime (surface water), will be described in so much as they interact with land contamination.

12.22 The Phase 1 Desk Study will be informed by a review of third-party data and a site walkover. It will provide a preliminary Ground Model representing ground conditions at the Site and development of an initial Conceptual Model (ICM), including identification of potential pollution linkages. A qualitative assessment will be undertaken of any geo-environmental risks identified to identify plausible geotechnical hazards.

12.23 The Phase 2 Ground Investigation will provide general coverage across the Site and will also target any areas of potential contamination (such as the landfill and the farmyard areas) identified by the walkover survey and the Phase 1 Desk Study (taking into account any access restrictions). This investigation will comprise trial pitting, borehole drilling and installation of gas and groundwater monitoring wells, and analysis of soil samples. This data will be used to update the conceptual site model and the conceptual ground model to determine the likely contaminant linkages which could give rise to significant environmental effects in the absence of mitigation.

Key Receptors

12.24 The key receptors relevant to the assessment are likely to include the following:

- Site preparation and construction workers;
- Off-site population;
- The surrounding ecosystem (including Rushy Meadows SSSI);
- End users of the Proposed Development (residents, workers, visitors etc.);
- Structures, and the construction materials used, in the Proposed Development;
- Landscape planting and private gardens in the Proposed Development;
- The groundwater environment; and
- The surface water environment.

Assessment Approach

- 12.25 The potential impacts and receptors resulting from the construction phase and the completed Proposed Development will be assessed based on the Conceptual Model of geo-environmental site conditions. The assessment will be made in line with the sustainable development objective of the NPPF, which, amongst other factors includes using natural resources prudently and the minimisation of waste and pollution. As part of the assessment, there will be a presumption in favour of the re-use of all suitable site won materials to create the development platform.
- 12.26 A qualitative risk assessment will be undertaken to assess the magnitude of the impacts to sensitive receptors which are likely to include human receptors (e.g. people living and working nearby), as well as controlled waters and ecology. The significance of a potential effect will be based on guidance presented within CIRIA Report C552⁷⁶. The chapter will also consider whether any mitigation or monitoring measures are necessary. Where possible, mitigation measures will be embedded into the design of the Proposed Development to reduce the environmental effects to an acceptable level. However, where this is not sufficient further mitigation will be specified to mitigate significant adverse effects that have been identified.

13 Agricultural Land and Soils

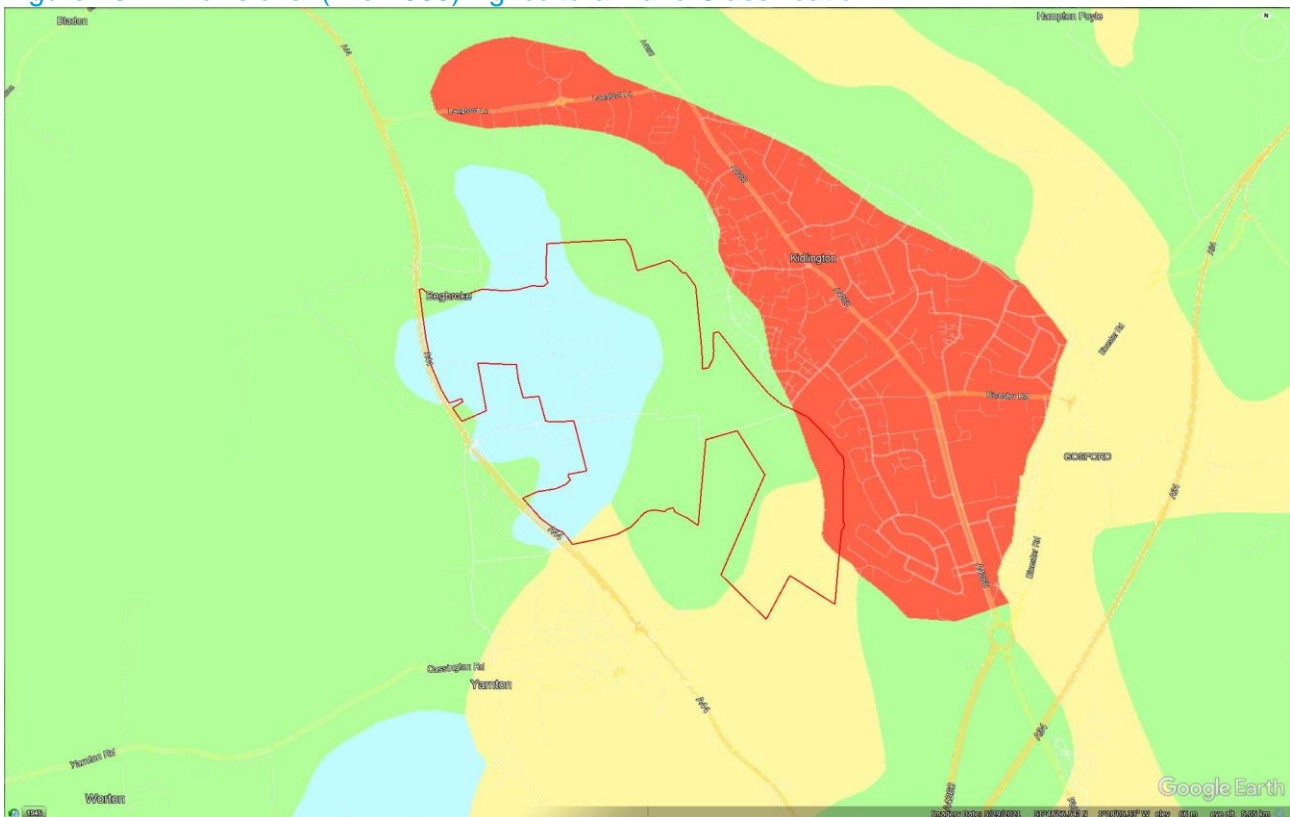
Baseline Conditions

- 13.1 British Geological Survey ('BGS') information available online⁷⁷ has been utilised to identify the bedrock underlying the Site and any superficial (Drift) deposits over the bedrock. This information helps to determine the parent material from which the soil has formed.
- 13.2 This indicates that the Site is underlain by four types of bedrock, as described in detail in Chapter 12: Ground Conditions and Contamination. In order of predominance, these are as follows:
- The predominant bedrock underlying the Site is mudstone in the Oxford Clay Formation and West Walton Formation;
 - To the north of the Begbroke Science Park in the north of the Site, there is a narrow band of sandstone and siltstone (interbedded) in the Kellaways Sand Member which is orientated east to west across the Site;
 - To the north of the band of Kellaways Sand Member, there is a band of mudstone in the Kellaways Clay Formation flanking the Rowel Brook which forms the north-west boundary of the Site;
 - A pocket of limestone in the Cornbrash Formation is located to the north of the Rowel Brook and up to the northern boundary of the Site.
- 13.3 The majority of the mudstone and the limestone in the north of the Site is covered by a superficial deposit of sand and gravel in the Summertown-Radley Sand and Gravel Member. In the eastern part of the Site, mainly between the railway line and the Oxford Canal, the mudstone is covered by Alluvium (clay, silt, sand and gravel).
- 13.4 The National Soil Map, which is held by the National Soil Resource Institute ('NSRI') at Cranfield University, indicates the soils at the Site are grouped into three main soil associations (i.e., a group of soil series/types which are typically found occurring together in the landscape). These are (in order of predominance):
- The Sutton 1 association (571u), which covers approximately 50% of the land in the northern and central parts of the Site, to the west of the railway. This association comprises well drained fine (clayey) and loamy soils which are locally calcareous;
 - The Kelmscott association (832), which covers approximately 40% of the Site in the south, and to the east of the railway. This association is characterised as calcareous, fine (clayey) loamy soils variably affected by groundwater;
 - The Denchworth association (712b), which covers the remaining 10% of the Site along the western boundary (A44). These soils are formed from mudstone and may be described as slowly permeable and seasonally waterlogged clayey soils.
- 13.5 The Agricultural Land Classification ('ALC') system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The ALC system divides agricultural land into five grades (Grade

1 'Excellent' to Grade 5 'Very Poor'), with Grade 3 subdivided into Subgrade 3a 'Good' and Subgrade 3b 'Moderate'. Agricultural land classified as Grade 1, 2 and Subgrade 3a falls in the 'best and most versatile' (BMV) category in Paragraph 174 and 175 of the NPPF.

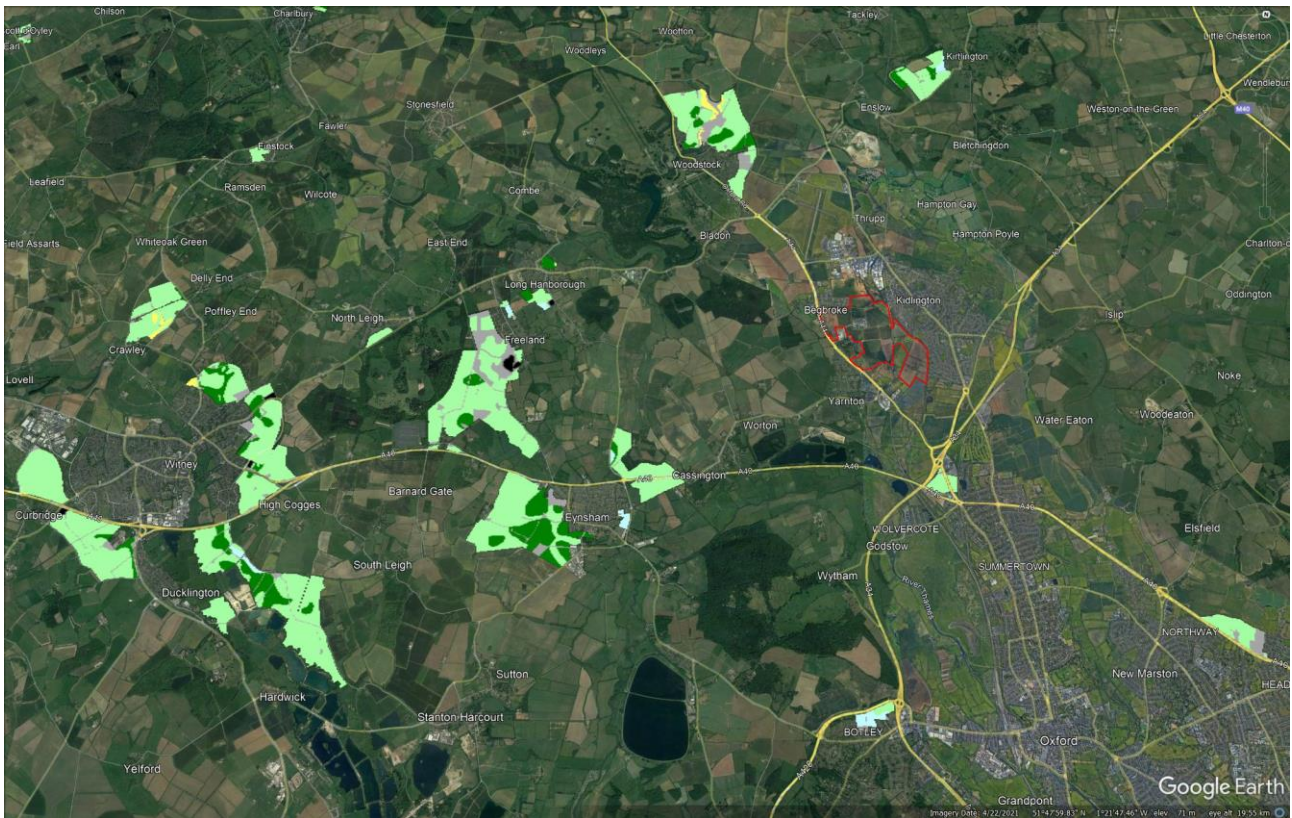
13.6 As shown in Figure 13.1, the national provisional (Pre-1988) ALC map indicates the agricultural land in the northern and central parts of the Site is Grade 2 (coloured light blue), i.e., broadly associated with soils in the Sutton 1 association. The agricultural land in the eastern part of the Site (i.e., broadly correlating with soils in the Kelmscott association) is classified as mainly Grade 3 (coloured green and not differentiated between Subgrades 3a and 3b), with some Grade 4 (coloured yellow) in the south east.

Figure 13.1: Provisional (Pre-1988) Agricultural Land Classification



13.7 As shown on Figure 13.2, the Ministry of Agriculture, Fisheries and Food ('MAFF') has not carried out any detailed, Post-1988 ALC surveys at the Site, but has determined a mixture of mainly Subgrade 3a (coloured dark green) and Subgrade 3b (olive green) in the vicinity. From the MAFF Post 1988 ALC findings in the Begbroke area (as shown in Figure 5.2), it is likely there will be a mixture of Subgrade 3a (in the BMV category) and Subgrade 3b (in the order of 50:50 ratio) at the Site.

Figure 13.2: Detailed (Post-1988) Agricultural Land Classification



Future Baseline

13.8 Without the Proposed Development, the Site is expected to remain in some agricultural use. For the purpose of this assessment, it is assumed the soil associations at the Site will not change significantly over the long term (i.e., in the next 100 years). Academic research predicting the likely changes in agricultural land quality as a consequence of climate change indicates that ALC grades in England are unlikely to change significantly in the short and medium term up to 2050. It is difficult to predict the changes in agricultural land quality beyond 2050, but it is possible there will be a higher proportion of Grade 4 (poor quality) due to a shortage of water available for crop growth in the soil (i.e., soil droughtiness) associated with lower levels of annual rainfall.

Assessment Scope

Potential Significant Effects

Construction

13.9 Whilst it is proposed that not all of the Site will be subject to built development, land which is currently in agricultural use will be lost as a consequence of the Proposed Development. The Proposed Development may also lead to the loss of good quality agricultural land. The potential likely significant effects of the construction phase that will be assessed in the ES comprise the following:

- Temporary loss of agricultural land required to construct the Proposed Development;

- Permanent loss of agricultural land required to construct the Proposed Development; and
- Effects of constructing the Proposed Development on soil resources (topsoil and subsoil) and the functions they perform for society.

Completed Development

13.10 It is proposed that some land will be retained in agricultural use and for allotments as part of the Proposed Development (see Chapter 3: Description of the Proposed Development'). With regard to land-take/requirement, it is predicted there will be no likely significant effects on agricultural land and soil once the Proposed Development is completed, i.e., further agricultural land will not be taken out of agricultural use during the operational phase. As such, it is proposed that the potential likely significant effects of the completed Proposed Development on agriculture and soils will be scoped out of the ES.

Cumulative Assessment

13.11 The ES will consider the potential for cumulative effects on agricultural land in the vicinity of the Site, specifically in consideration of the loss of BMV agricultural land at the Site in combination with cumulative schemes in the area.

Assessment Methodology

Study Area and Spatial Scope

13.12 This topic will assess the likely significant effects of the construction phase of the Proposed Development on agricultural land and soil within the Site. For the purpose of this scoping report, it is assumed that no agricultural land or soil resources will be affected off-site, e.g., for utilities.

Baseline Assessment

13.13 Following Natural England's '*Guide to assessing development proposals on agricultural land*'⁷⁸, a detailed ALC survey will be carried out to determine the definitive ALC grades of agricultural land within the Site boundary, and in particular the amount of BMV agricultural land involved.

13.14 The ALC survey will involve examination of the soil's physical properties at approximately 180 auger-bore locations on an approximate 100m grid pattern, at a sampling density of approximately 1 auger bore per ha. The soil profiles will be examined at each sample location to a maximum depth of approximately 1.2m by hand with the use of a 5cm diameter Dutch (Edleman) soil auger. A number of representative soil pits per soil type/association encountered on Site will be excavated by hand with a spade in order to examine certain soil physical properties, such as stone content and the structural condition of the subsoil in detail. The locations of the auger bores and the soil pit is shown on Figure 13.3. Where auger locations fall on field boundaries (headland), tractor wheelings (tramlines), or within 3m of a hedgerow or tree, they have been relocated on agricultural land close by, i.e. to avoid compacted ground or land affected by tree roots, etc.

13.15 Samples of topsoil will be collected to represent the range of soil types across the Site. The samples will be sent to an accredited laboratory for particle size analysis, i.e., the proportions

of sand, silt and clay. This is to determine the definitive texture class of the topsoil, especially with regard to distinguishing between medium clay loams (i.e., <27% clay) and heavy clay loams (27% to 35% clay).

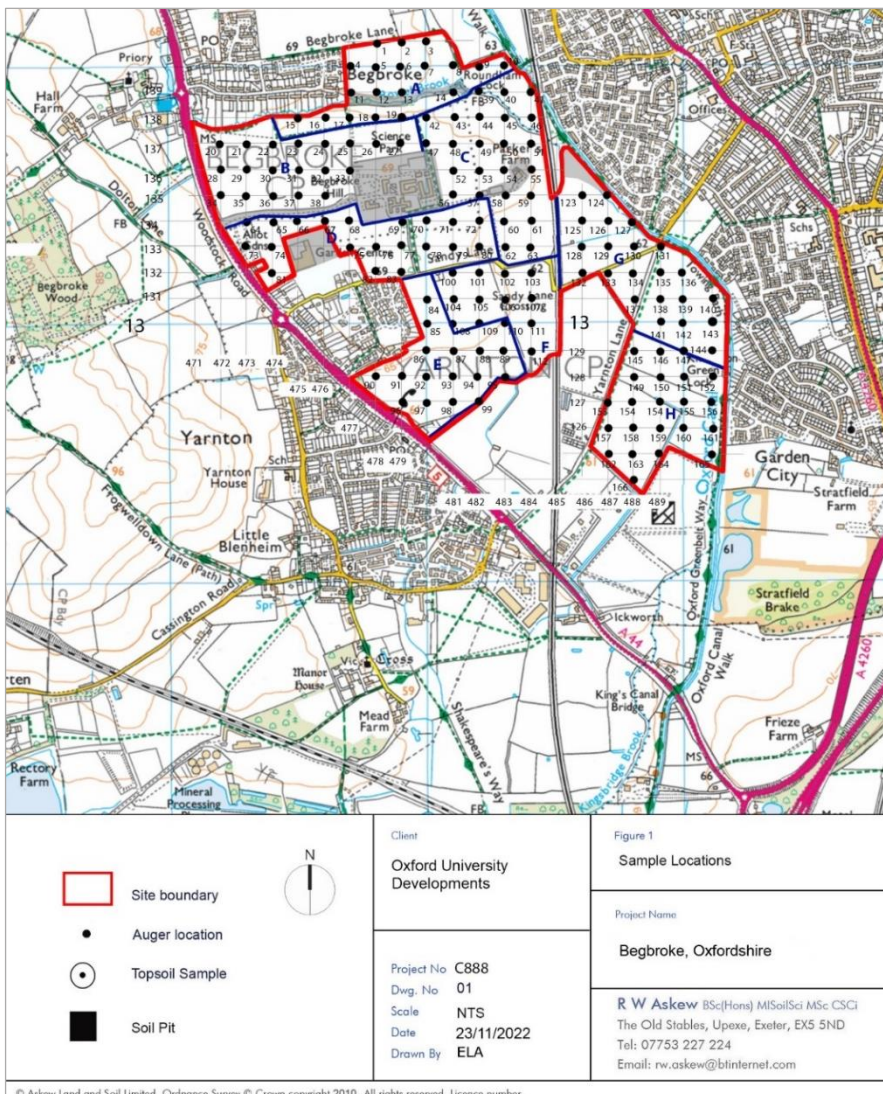
13.16 The soil profile at each sample location will be described using the ‘Soil Survey Field Handbook: Describing and Sampling Soil Profiles’ (Ed. J.M. Hodgson, Cranfield University, 1997). Each soil profile will be ascribed an ALC grade following the MAFF ALC Guidelines.

Key Receptors

13.17 The following receptors are considered sensitive to potential likely significant effects arising from the Proposed Development:

- Agricultural land, especially BMV agricultural land (i.e., ALC grades 1, 2 and 3a);
- Soil resources on the Site, including identification of soil types with ‘High’, ‘Medium’, and ‘Low’ resilience to damage during soil handling, and consideration of changes to soil functions, e.g., change from ‘food and fibre production’ to ‘platform for construction’.

Figure 13.3: ALC/Soil Survey Auger-bore Locations



Assessment Approach

- 13.18 Following the Soils in Planning Construction Task Force's (Lancaster University *et al*) recent best practice guidance '*Building on soil sustainability: Principles for soils in planning and construction*' (September 2022)⁷⁹, and the Institute of Environmental Management and Assessment's (IEMA) '*A New Perspective on Land and Soil in Environmental Impact Assessment*' (February 2022)⁸⁰, the assessment will consider the likely significant effects of the Proposed Development on key soil functions (including food and fibre production and carbon sequestration, etc).
- 13.19 The sensitivity of agricultural land will be determined according to its ALC grade, with Grade 1 being the most sensitive and Grade 5 being the least sensitive. The sensitivity of soil resources will be determined according to their resilience to handling and disturbance, which is determined largely by their texture and moisture content.
- 13.20** The magnitude of change of the Proposed Development on agricultural land (including BMV) will be determined according to the area of land that would be permanently removed from agricultural use, having regard to the existing arrangements for local planning authorities to consult Natural England on developments that involve the loss of 20ha or more of BMV land. The magnitude of change on soil resources will be related to the degree to which soils can continue to perform their various ecosystem functions.

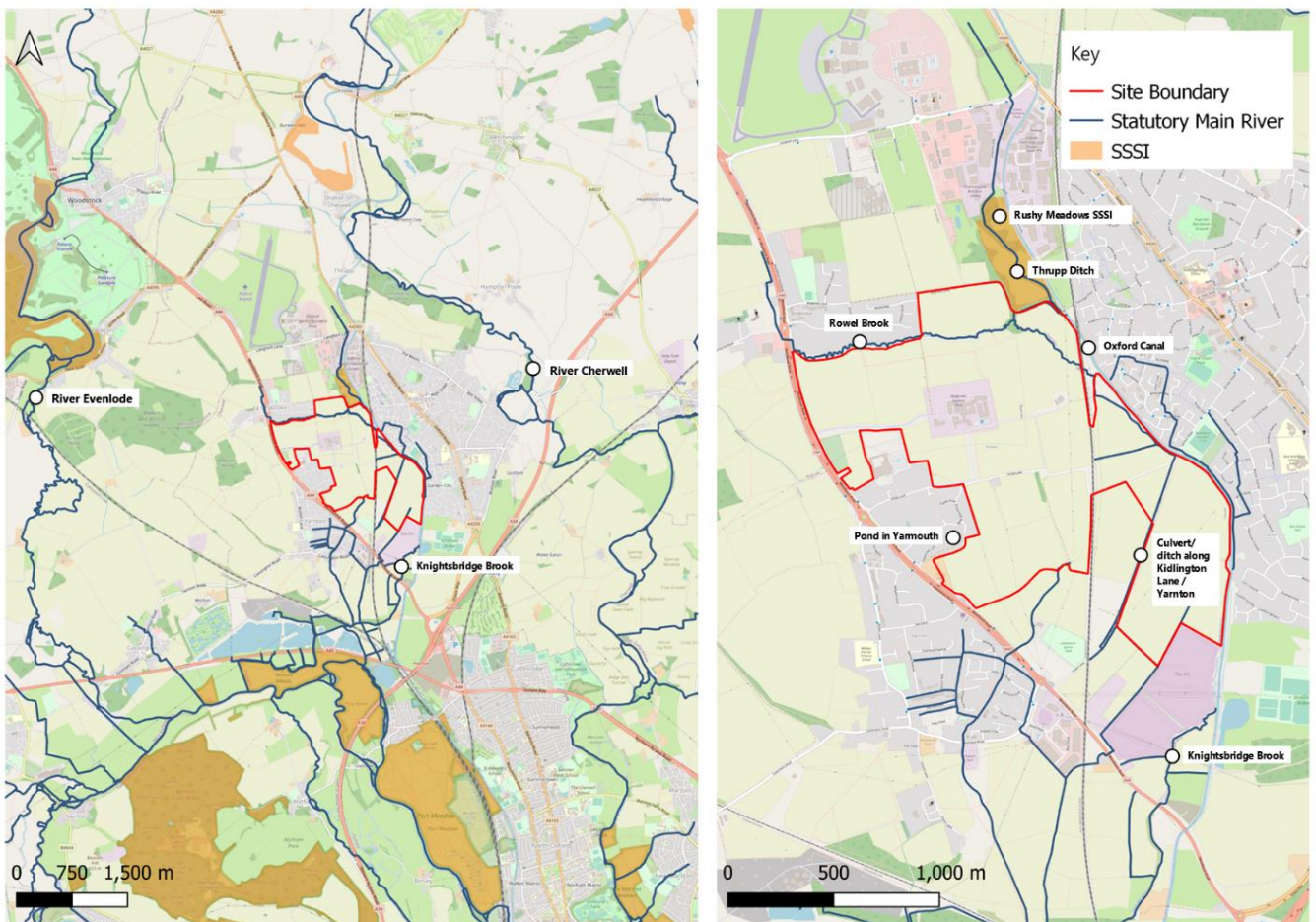
14 Water Resources and Flood Risk

Baseline Conditions

Surface Waterbodies and Catchments

14.1 The Site lies within the Ock Operational Catchment which is within the Thames River Basin District. The River Ock itself is over 15km south of the Site and is therefore not itself considered to be a receptor for this assessment. There are a number of surface water bodies within and surrounding the Site which comprise the surrounding surface water environment, as shown in Figure 14.1.

Figure 14.1: Key Waterbodies Relevant to the Assessment



14.2 The Oxford Canal borders much of the Site to the east and forms a natural barrier between the Site and Kidlington. Kingsbridge Brook (classified by the EA as a Main River) is connected to the Oxford Canal and merges with it approx. 225m south of the Site.

14.3 Rowel Brook (Main River) is a small stream which runs through the north of the Site between the Oxford Canal at Kidlington and Begbroke. This runs parallel to Oxford Canal and recrosses the Site, running along a ditch/culvert parallel to Kidlington Lane and the Site boundary before

diverting and running along the track parallel to the south western Site boundary. In the southern area of the Site there are some ditches and culverts which are also classified as Main Rivers by the EA. These include a ditch/culvert which follows Kidlington Lane / Yarnton Lane.

- 14.4 On the north-eastern boundary of the Site and adjacent to the Oxford Canal is Rushy Meadows SSSI – an unimproved alluvial grassland with meadows with fen communities. A small watercourse (Thrupp Ditch) runs through the SSSI, flowing in a north-south direction, and converges with Rowel Brook to the south of the SSSI boundary. A further ditch/culvert, also classified as a Main River, runs along the eastern boundary of the Little Marsh Playing Field car park, circa 260m south of the Site. Intrusive site investigation will determine whether or not there are any hydrological links between the Site and SSSI.
- 14.5 There is a pond in Yarnton, 45m from the western boundary of the Site, and another pond 280m to the north of the Site, likely to be former settlement ponds. There is also a pond between Kidlington Lane and the Cherwell Valley railway line, approximately 70m south of the Site at its closest point.

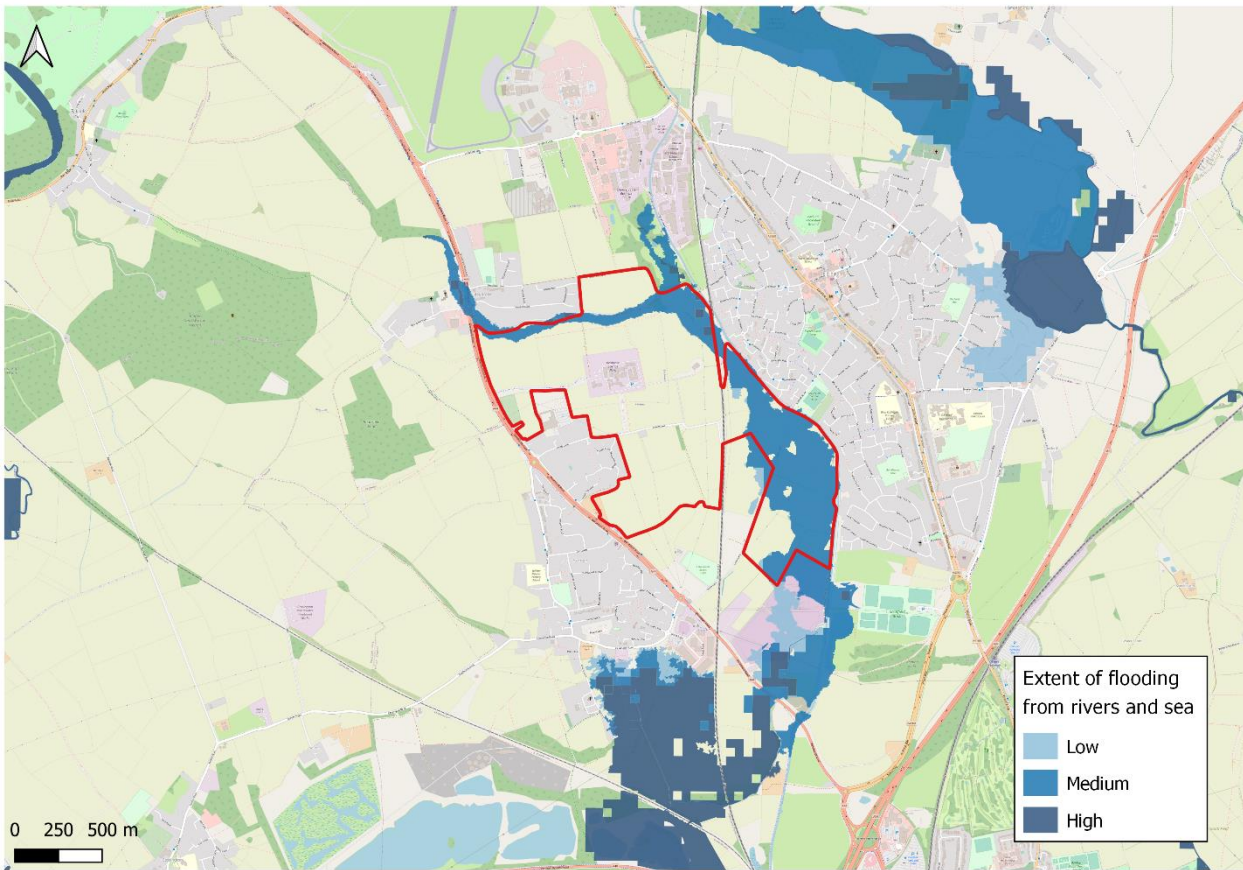
Groundwater

- 14.6 The Summertown Radley Sand and Gravel Member is classified as a Secondary A Aquifer. The Oxford Clay and the Kellaways Clay Member are noted as 'Unproductive Stratum', with the Kellaways Sand Member and the Cornbrash Formation classified as 'Secondary A Aquifers'. The Site is not within a groundwater Source Protection Zone and there are no abstractions in the Site.

Flood Risk

- 14.7 The majority of the western part of the Site is within Flood Zone 1 and therefore classified as being at low risk of fluvial flooding. However, the northern edge of the Site adjacent to Rowel Brook, and the majority of the Site located east of the Cherwell Valley railway line are within Flood Zone 2 or 3, indicating a medium or high risk of flooding. Figure 14.2 shows the risk of flooding from rivers in the vicinity of the Site.
- 14.8 Initial consultation with the EA confirmed that a detailed flood model for the Site is not available, therefore a hydraulic modelling study is being undertaken to confirm the flood extents.

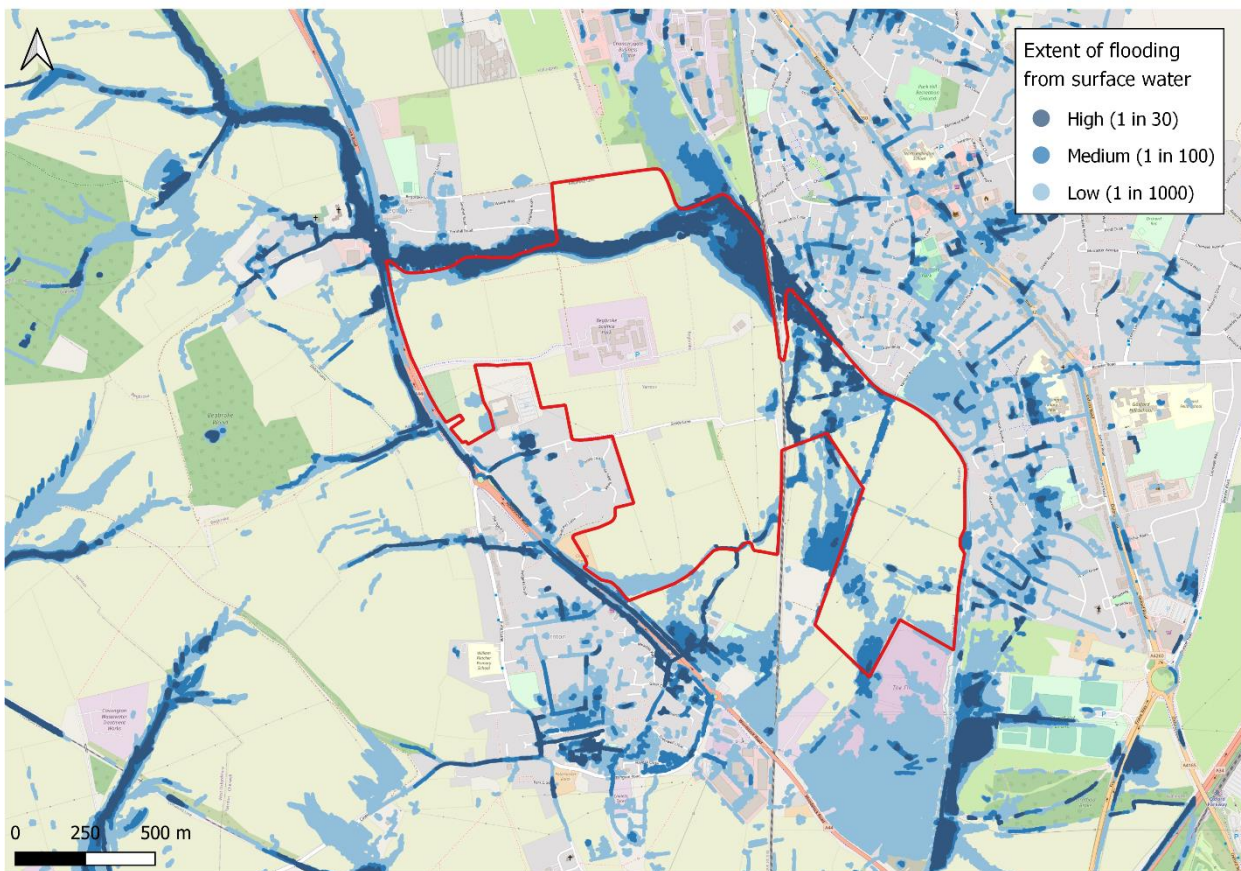
Figure 14.2: Extent of fluvial flooding



14.9 Figure 14.3 shows the risk of flooding from surface water. There are areas in the south of the Site which are subject to surface water flooding.

14.10 Groundwater flooding may be a risk for areas of the Site. Shallow groundwater flows from the topographic high in the west of the Site, to the east and south-east. In the north of the Site, groundwater flow is towards Rowel Brook. Groundwater is at its shallowest depth in the east of the Site, within the floodplain. A site investigation was undertaken in Autumn 2022, which included groundwater monitoring, and the results will be assessed in the ES.

Figure 14.3: Extent of surface water flooding



Water Quality

14.11 The Oxford Canal, which borders the Site to the east, is the waterbody of foremost consideration given its location, size and function. It is an artificial water body and, in the 2019 cycle of the Water Framework Directive ('WFD'), it had a 'moderate' ecological classification, and a chemical classification of 'fail' due to the presence of priority hazardous substances.

14.12 The River Cherwell located approximately 1.5km east of the Site. It is heavily modified and is currently designated as moderate potential for ecological quality and a failure for chemical quality (2019 WFD survey). There is not considered to be any surface-water hydrological connection from the Site to the River Cherwell, although this will be confirmed in the ES. A 2018 hydrological and hydrogeological desktop study for CDC⁸¹ found a number of hydrological or hydrogeological pathways between the Site, Rowel Brook and Rushy Meadows SSSI. The hydrological connectivity of the Site to Rushy Meadows SSSI will therefore be scoped into the ES, however it is worth noting that the study classified the preliminary risk level for the SSSI to be 'negligible'.

14.13 The Thames Water Resources Management Plan ('WRMP') demonstrates how the Swindon and Oxfordshire ('SWOX') water resource zone has moved into a situation of supply-demand deficit and, without intervention, this will increase as a result of population growth, climate change and sustainability reductions. There is restricted water availability in Oxfordshire for additional abstractions, and existing abstractions may not be available all year.

14.14 Cherwell Water Cycle Study⁸² indicates PR8 would connect to the Cassington Waste Water Treatment Works ('WwTW'), although upgraded infrastructure is likely to be necessary. Early engagement with Thames Water will be carried out to understand associated delivery/cost implications and potential HRA requirements.

Future Baseline

14.15 Climate forecasts show that because of climate change, the UK is likely to experience slightly wetter winters and drier summers in the future. Current climatic conditions will be considered representative of the climate during the construction period. Effects associated with the completed Proposed Development will take into account the likely impacts of climate change on the frequency and intensity of rainfall events, river flows, flood levels, based on published information.

Assessment Scope

14.16 The ES Chapter will assess the potential effects of the Proposed Development on the surrounding water environment and the potential effects of the water environment on the proposals and its users. This will include an assessment of the potential changes in water supply, foul drainage, surface water drainage, pollution prevention and flood risk.

14.17 The current drainage arrangements for the Site will be reviewed as part of the drainage strategy to be developed for the Proposed Development in consultation with the Lead Local Flood Authority (LLFA). Appropriate consultation will be held with Thames Water Utilities Limited (foul water, surface water and potable water) to agree connections and flow rates.

14.18 Early principles of the drainage strategy for the Proposed Development seek to replicate the existing surface water catchments wherever possible, maximising SuDS and infiltration potential using swales and channels and attenuation basins, before surface water is discharged into existing water courses. The overall design intent is to respect the existing surface and storm water catchments. The discharge rate will be limited to mean annual flood flows wherever possible, as requested by the LLFA.

14.19 Attenuation basins are proposed in the north of the Site that will prevent water draining from the Development into Rushy Meadows SSSI. Instead surface water runoff will be diverted into Rowel Brook, which flows into the Oxford Canal.

Potential Significant Effects

Construction

14.20 The potential significant effects during the construction phase are likely to include:

- Effects on water quality of water bodies due to localised changes in surface water flow regime during rainfall events, deterioration of the quality of surface water runoff from the Site, and accidental leaks and spillages of hazardous material;
- Impacts on flood risk to construction workers and plant; and
- Demand and supply on water network.

Completed Development

14.21 The potential significant effects during the operational phase are likely to include:

- A change in surface water discharge rates which may influence flood risk to the Site, adjacent sites, and areas downstream, including surface water runoff and potential hydrological changes affecting Rushy Meadows SSSI;
- The vulnerability of the Proposed Development to flood risk (all sources);
- Change of surface water flow regime across the Site changing capacity requirements for surface water sewer network;
- Change in the quality of surface water run-off, which may influence the quality of nearby water bodies, via the surface water sewage network; and
- Increased potable water demand and foul water demands from the Proposed Development placing pressure on existing infrastructure.

Potential Non-Significant Effects

14.22 Groundwater flooding will be assessed in the ES chapter. However, potential impacts and effects on aquifers or groundwater are to be addressed in Chapter 12: Ground Conditions and Contamination of the ES.

14.23 The Oxford Canal at this location is in the Cherwell Canals Operational Catchment under the Water Framework Directive (WFD) classification. However, a WFD assessment is proposed to be scoped out of the ES as it is not considered that any activities will be undertaken as part of the Proposed Development that will include works or modifications to the Oxford Canal water body.

Cumulative Assessment

14.24 The cumulative assessment for water resources will consider the potential impact of all proposed cumulative schemes being developed. From a construction perspective, it will qualitatively assess the combined effects of the cumulative schemes that share common receptors, in a scenario where construction is occurring simultaneously. Similarly, the operational assessment will consider all schemes that share common receptors, and from a water supply and waste water demand perspective, will consider the capacity of these networks to accommodate all proposed schemes through discussion with the utility providers.

14.25 Cumulative schemes are required to implement a drainage strategy that provides neutrality or betterment on the current drainage regime. Therefore, the cumulative impacts in terms of flooding should be no worse than the current flood risk and may well provide betterment.

Assessment Methodology

Study Area and Spatial Scope

14.26 The study area and Zone of Influence ('Zol') covers all water bodies present on the Site, as well as other natural water bodies hydrologically connected to the Site through surface run-off or connections through sewer infrastructure. This Zol has been defined to capture any potential pollution and flood linkages as a result of changes to the surface water flows and management regime during construction and operation of the Proposed Development.

Baseline Assessment

14.27 The baseline assessment will consider the existing conditions both on and around the Site. Data will be gathered from the following sources:

- Site visits;
- A review and summary of relevant international, national and local legislation and policy relating to the water environment;
- Review of relevant CDC Local Plan studies, including:
 - Rushy Meadows SSSI – Hydrological & Hydrogeological Desk Top Study (DTS) (2018)
 - Cherwell Water Cycle Study (AECOM, 2019);
 - Consultation with the relevant authorities (i.e. through pre-development enquires);
 - EA data on current quality of existing surface water features in line with the requirements of WFD;
 - Cherwell Level 2 Strategic Flood Risk Assessment (AECOM, 2017)⁸³;
- Review of existing permitted discharges and surface and ground water abstractions;
- Infiltration study (soil infiltration rate assessment) (Hydrock, 2021); and
- Review of existing surface water runoff regime and flood risk issues. A detailed Flood Risk Assessment ('FRA') and drainage strategy, informed by hydraulic modelling, will form an Appendix to the ES Chapter.

Key Receptors

14.28 The key receptors considered relevant to the assessment include the following:

- Water bodies:
 - Oxford Canal;
 - Rowel Brook;
 - Rushy Meadows SSSI including Thrupp Ditch;
 - Culvert / ditch along Kidlington Lane / Yarnton Lane;
 - Pond in Yarnton;
 - Kingsbridge Brook (TBC dependent on water infrastructure connections);
 - River Cherwell (TBC dependent on water infrastructure connections); and
 - River Evenlode (TBC dependent on water infrastructure connections).
- Infrastructure and utilities:
 - Water supply;
 - Surface water drainage capacity; and
 - Foul drainage capacity.
- Human receptors:
 - Site users, human health and safety, construction workers and plant.

Assessment Approach

- 14.29 The current drainage arrangements for the Site will be reviewed as part of the drainage strategy for the Proposed Development, which will form an appendix to the ES Chapter. Additionally, a FRA will be prepared and will also form a supporting appendix to the ES Chapter.
- 14.30 The methodology to be adopted in this assessment will involve a review of international, national and local legislation, policies and guidelines and establishment of baseline conditions on and around the Site through a literature review and analysis of existing data obtained from the EA, Thames Water ('TW') and the local drainage board. Consultation will be undertaken with the Local Lead Flood Authority ('LLFA'), EA and utility providers to inform the development design and scope of assessment. Sensitive receptors will be identified through desk study and consultations to identify risks to water quality, water resources and flooding from the Proposed Development.
- 14.31 Assessment criteria will incorporate the consideration of receptor sensitivity, the magnitude of change upon it and an evaluation of the resulting effect significance. The full assessment methodology will be presented within the ES chapter. The likely impacts and magnitude of change and significance of environmental effects will be defined for both the construction and operational phases.
- 14.32 An FRA will be prepared in accordance with the requirements of the LLFA, EA and relevant contents of NPPF policy and PPG guidance and will assess all relevant sources of flood risk. The FRA will be informed by a bespoke hydrological and hydraulic modelling study of the watercourses which cross and run in the vicinity of the Site, due to be complete in early 2023. The assessment related to flood risk will draw upon the studies and conclusions made within the FRA. Residential development and other vulnerable uses would be located outside the modelled Flood Zone 2 and 3 envelope as identified by the hydraulic modelling study.
- 14.33 Engagement with Thames Water and the EA will be undertaken, and discussed in detail in the drainage strategy, to consider the capacity of wastewater treatment infrastructure and identify a workable solution to manage the development's wastewater.
- 14.34 With reference to best practice (e.g. CIRIA guides) mitigation measures will be identified to manage and control works during construction. Identification of opportunities for enhancement of surface water quality and surface water management through the development of a surface water drainage strategy will be sought and mitigation strategies will be developed.

15 Landscape and Visual

Baseline Conditions

- 15.1 The Site is located between the settlements of Yarnton, Begbroke and Kidlington, with Oxford Airport located approximately 780m to its north. Oxford City lies approximately 1.5km south of the Site.
- 15.2 The Site predominantly comprises small- to large-scale arable fields, which are delineated by a combination of established tree belts, hedgerows and shrub vegetation. Begbroke Science Park also forms part of the Site and is located in its northern extents. A small number of residential and agricultural buildings are located sporadically within the Site's extents. The Site is crossed by several PRowS, comprising a mixture of public footpaths and a single byway. With the northern extents of the Site, a single footpath crosses the fields of the Site (between the southern edge of Begbroke and the Begbroke Science Park), connecting the A44 with the Oxford Canal Path in an east-west direction. A series of shorter footpaths connect Begbroke Lane (to the immediate north of the Site) across the Site's fields to Sandy Lane, which is located in the centre of the Site. A section of byway, which follows Begbroke Lane to the north of the Site, enters and exits the Site within its north-eastern extents, before connecting to the Oxford Canal Path. Within the southern extents of the Site, a single footpath follows the route of Green Lane, which connects the A44 and Sandy Lane. Two local roads, Sandy Lane; Begbroke Hill, cross the landscape in which the Site is located, as does the Cherwell Valley line. Rowel Brook crosses the northern extents of the Site.
- 15.3 The Site's boundaries are defined as follows:
- The northern / north-eastern boundary is delineated by an established belt tree with a shrub understorey (along the southern edge of Begbroke); and hedgerow / shrub vegetation that form part of the wider field boundary network and along Begbroke Lane.
 - The eastern boundary is delineated by established tree and shrub vegetation that line the towpath of the Oxford towpath. There are a few gaps in this boundary vegetation.
 - The southern boundary is delineated by field boundary vegetation, comprising established shrub and trees.
 - The western boundary is delineated by the A44 – Woodstock Road. The southern extents of the Site's western boundary are marked a combination of tree and shrub vegetation, which lines the northern side of the A44. Along the northern extents of the western boundary, this vegetation continues in combination with residential properties that extend eastwards from the A44 to the immediate south of Sandy Lane.
- 15.4 The topography of the Site is relatively level, although it rises within central areas, around the northern edge of Yarnton. It ascends to its highest point along Sandy Lane, near to the north-east edge of Yarnton, at approximately 69m AOD. The Site's topography falls gently towards its eastern boundary (at approximately 63m AOD); and to the fields within the southern extent of the Site (approximately 61m AOD). The wider topographical context of the Site is characterised by an undulating plateau landform, with a series of broad river valleys. Within

this context, the Site and the adjoining settlements are located upon low-lying areas of land that forms part of the wider broad valley basins.

- 15.5 The Cotswold Area of Outstanding Natural Beauty ('Cotswold AONB') is located approximately 3.5km to the north-west of the Site, and where it is located within the study area, encompasses part of Blenheim Place – a Registered Park and Garden. No other designated landscapes have been identified within the study area.

Future Baseline

- 15.6 Assuming the Site remains in agricultural use, the future baseline landscape character and visual amenity will remain broadly unchanged, albeit there may be changes to crop patterns, vegetation types and disease as a result of climate change.

Assessment Scope

Potential Significant Effects

Construction

- 15.7 Enabling and construction works associated with the Proposed Development would be characterised by the movement of vehicles and plant within and around the Site; alongside other typical components such as workers' facilities, stockpiles of materials and / or lighting of specific areas. As a result, potential temporary adverse effects on landscape and visual could arise.
- 15.8 Although construction activity is different in nature to the completed development, it is judged that the construction phase would not give rise to effects over and above those of the completed Proposed Development. While the scale of effects may be greater during the construction phase, the duration of effects would be considerably shorter in comparison to the completed (and permanent) Proposed Development. Therefore, it is proposed that only effects arising as a result of the permanent Proposed Development (i.e. once construction is complete and operational) will be scoped into the assessment and a construction phase assessment will not be provided.
- 15.9 A Framework CEMP will be prepared and submitted with the ES in order to ensure appropriate best practice measures are in place to provide appropriate screening and protection of retained / planted vegetation.

Completed Development

- 15.10A preliminary review of the emerging scheme proposals indicates that the completed Proposed Development may result in a number of potential likely significant effects on landscape and visual receptors within and around the Site, as follows:

Landscape Character

- 15.11 It is anticipated that within the Site and its immediate context, effects on landscape character would inevitably arise given the change in land use from a series of agricultural fields into a new area of built development.

15.12 Beyond the Site's immediate context, it is anticipated that effects on landscape character would rapidly decrease with distance from the Site. This is based on the understanding that the emerging Proposed Development design proposals seek to bring forward built form within areas which are visually well-contained and relate well to the existing settlement area, retain and enhance existing landscape fabric, and create new areas of green infrastructure.

Visual Receptors

15.13 The Site is visually well-contained to its immediate context. Where views are possible within the Site and its immediate context, they would fundamentally change from visibility of agricultural fields to a new area of development.

15.14 With distance from the Site, it is anticipated that effects on visual receptors / amenity would rapidly reduce as visibility of the Proposed Development decreases. Where views remain possible, it is anticipated that whilst the Proposed Development would inevitably extend the settlement area further into the landscape from the current extents of Yarnton and Kidlington, it would be perceived in the context of the existing settlement area; would be generally well contained within the landscape; and would not result in the loss of any panoramic views or vistas. As such, views from locations beyond the Site's immediate context would remain largely unchanged.

Designated Landscapes

15.15 While initial desk and field study has identified that it is highly unlikely that there will be any intervisibility with the Cotswold AONB, the LVIA will consider any potential effects on its setting.

Cumulative Assessment

15.16 In accordance with LDA Design's methodology, consented developments will be treated as being part of the landscape and visual cumulative baseline. i.e. it is assumed that consented schemes will be built out except for occasional exceptions where there is considered to be a good reason to assume that they will not be constructed. Where relevant, consideration will be given to the effects of the Proposed Development in combination with other developments identified by CDC following the return of the Scoping Opinion.

Assessment Methodology

Study Area and Spatial Scope

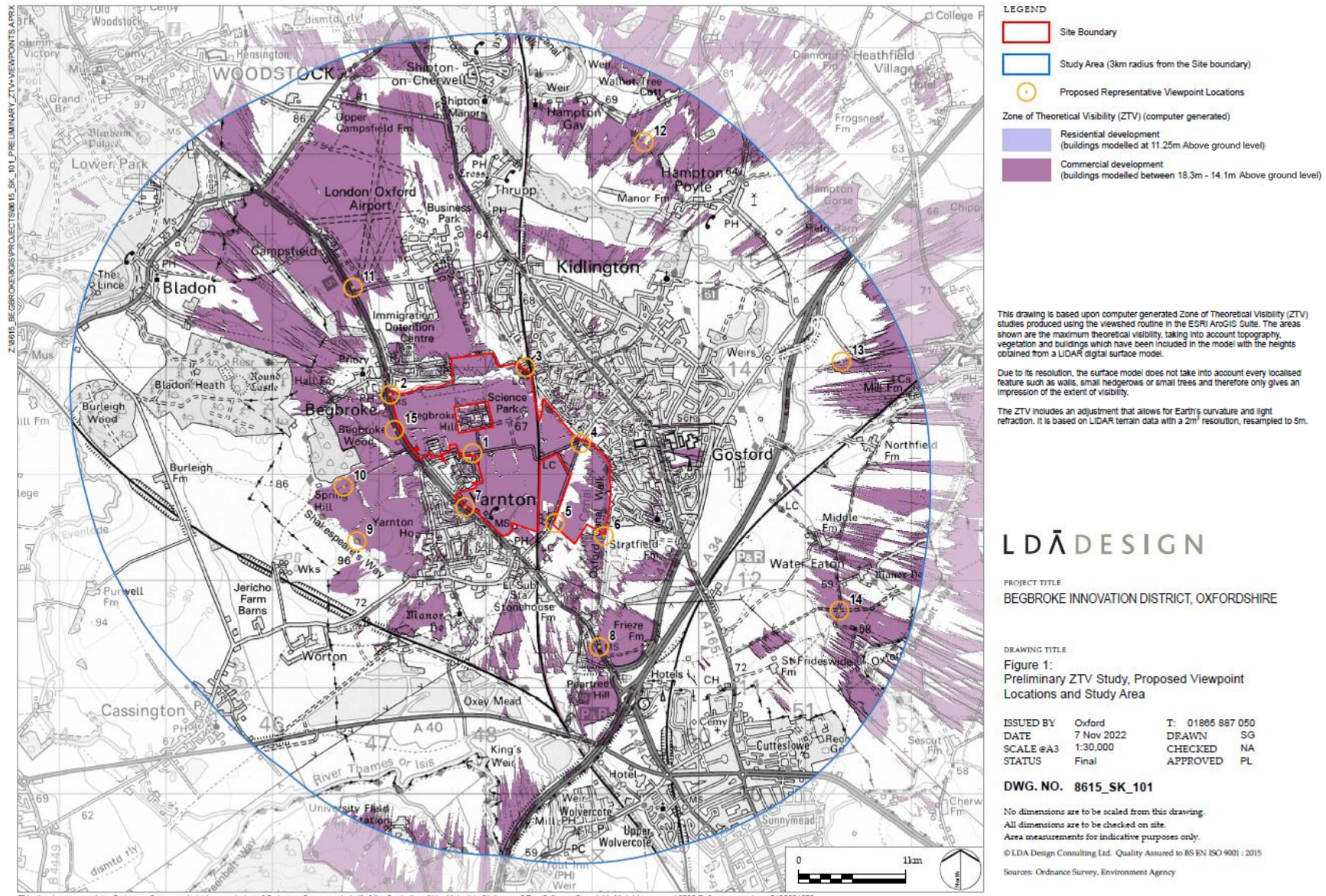
15.17 It is proposed that a study area defined by an 3km radius from the Site's boundary is used for the purposes of the LVIA Chapter. The study area includes the settlements of Begbroke, Yarnton and Kidlington adjacent to the Site; the northern edge of Oxford to the south; Blenheim Place to the north-west; and outlying villages, including Bletchingdon and Islip to the north-east / east and Cassington to the south-west. This extent is based on the findings of a field survey; preliminary Zone of Theoretical Visibility ('ZTV') modelling, desk-based analysis; and previous experience of the Site's local context and projects of this nature.

15.18 The preliminary ZTV indicates that the Proposed Development's theoretical visibility would be relatively contained across the study area, as shown on Figure 15.1. The extent of theoretical visibility would extend to parts of the landscape beyond the Site as follows:

- To the east of the Site between Yarnton and Begbroke;
- To the north / north-west of the Site between London Oxford Airport and Bladon;
- To the north-east, east and south-east of the Site where the landform rises in and around Bletchington, Islip and Elsfeld; and
- To the south / south-west around Port Meadow and Wytham, albeit the visibility is not widespread and very fragmented.

15.19As such, it is considered that a 3km study area would cover all potential likely significant landscape and visual effects arising from the Proposed Development.

Figure 15.1: ZTV and Indicative Viewpoint Plan



Baseline Assessment

15.20 The primary stage of the LVIA will establish a landscape and visual baseline by undertaking a detailed desk study, fieldwork and an analysis of findings. This stage will also include a review of current and relevant national / local policy and associated guidance documents; existing and historic landscape character assessments; capacity and sensitivity studies; and information on designated landscapes. The ZTV will be refined based on the parameter plans to confirm viewpoint selection and identify the range of visual receptors (e.g. people travelling along routes, or within open access land, settlements and residential properties) within the study area.

15.21 Baseline photographic panoramas will be produced during winter to represent the reasonable worst-case scenario for each viewpoint to illustrate the nature of existing views in the direction of the Proposed Development. Representative photography would be undertaken during the winter of 2022 / 2023, when the vegetation is out-of-leaf and represents a reasonable 'worst-case' scenario.

Key Receptors

15.22 The information gathered during the baseline assessment will be drawn together and reasoned judgements will be made as to which landscape and visual receptors merit detailed consideration in the assessment of effects. Based on the emerging development proposals, the following landscape and visual receptors have been identified:

- Landscape Character: Landscape Character Areas ('LCA') set out in the 'Cherwell District Landscape Assessment', which represents the most comprehensive, district level assessment of landscape character, will be assessed where they are located within the extent of the study area. Consideration will also be given to the effects of the Proposed Development on the physical fabric of the Site itself.
- Visual Receptors: In dealing with areas of settlement, PRowS and local roads, receptors will be grouped into areas where effects might be expected to be broadly similar, or areas which share particular factors in common. The following visual receptors are anticipated to be affected (to varying degrees) as a result of the Proposed Development:
 - Local residents and visitors to nearby settlements such as Yarnton, Begbroke and Kidlington;
 - People using key routes such as roads and cycle ways along the A44, A4165 or A34;
 - People within accessible or recreational landscapes within or nearby to local settlements; and
 - People using the PRow network within the Site or its surroundings.

Assessment Approach

Effects on Landscape Character

15.23 The LVIA Chapter will include an assessment of the effects of the Proposed Development on landscape character, including the immediate landscape context of the Site and its wider context within the study area. Consideration will also be given to the effects of the Proposed Development on the physical fabric of the Site itself.

15.24 Reference will be made to the following relevant landscape character assessments:

- National Character Area 108: Upper Thames Clay Vales⁸⁴;
- Oxfordshire Wildlife and Landscape Study (OWLS) (2004)⁸⁵;
- Cherwell District Landscape Assessment⁸⁶;
- CDC Local Plan Part 1 Partial Review Landscape Character Sensitivity and Capacity Assessment (2017)⁸⁷; and
- CDC Category "A" Villages Analysis - Final Report (2016) (which includes townscape assessments of Begbroke, Yarnton and Kidlington)⁸⁸.

15.25 The framework for the assessment of effects on landscape character will be the Cherwell District Landscape Assessment, representing the most comprehensive, district level assessment of landscape character, but supplement with information from the other sources listed above.

Effects on Visual Receptors and Proposed Representative Viewpoints

15.26 A wide variety of visual receptors can reasonably be anticipated to be affected by the Proposed Development. The LVIA Chapter will provide a review of the key local guidance documents and identifies those landscape and visual receptors which merit detailed consideration in the assessment of effects, and those which are not taken forward for further assessment as effects *"have been judged unlikely to occur or so insignificant that it is not essential to consider them further"* (GLVIA3, para. 3.19).

15.27 In order to identify those groups who may be significantly affected, a ZTV study, baseline desk study and site visits will be utilised. The refined ZTV study will be modelled on fixed building height parameters.

15.28 It should be noted that the ZTV represents a theoretical model of potential visibility of the Proposed Development based on a computer-generated terrain model that often has not accounted for any localised features such as small copses, hedgerows or individual trees; and/or small elements of built form. As a result, the extent of actual visibility on the ground will be less than suggested by the ZTV study. Field study has provided a more informed understanding of the potential visibility of the Proposed Development, which has refined the locations of the proposed representative viewpoints.

15.29 15 representative viewpoints have been proposed to assess the effects on visual receptors. These have been selected in publicly accessible locations and generally where the greatest potential effects are anticipated to be experienced. The viewpoints' locations represent a wide range of receptors, providing a 'sample' of the potential effects from the locality. Some locations are selected outside of that zone – either to demonstrate the reduction of effects with distance; or to specifically ensure the representation of a particularly sensitive receptor. It should be noted that the location of the proposed representative viewpoints may be further micro-sited during the assessment process. In accordance with guidance (GLVIA, 3rd Edition, 2013) illustrative viewpoints may also be identified to illustrate and describe particular points made within the assessment. These will be identified during the assessment process and may include locations where there is limited or no intervisibility. In addition, specific viewpoints may be identified where there are key promoted viewpoints within the study area, or illustrative

viewpoints to “*demonstrate a particular effect or specific issues, which might, for example, be the restricted visibility at certain locations*” (GLVIA, 3rd edition, para 6.19). The LVIA will present panoramic photographs from representative and illustrative viewpoints that will be illustrated on annotated panels.

15.30 The proposed study area and location of the 15 proposed representative viewpoints are shown Figure 15.1 and set out in Table 15.1.

Table 15.1: Proposed Representative Locations

Representative Viewpoint Locations	LVIA Receptors	Grid Reference	
		XY-coordinates	
Viewpoint 1: Sandy Lane, Yarnton <i>(Within the Site)</i>	Residents and visitors to Yarnton Users of Sandy Lane (motorists and cyclists)	447876	213196
Viewpoint 2: Public footpath (124/7/10), Begbroke <i>(Within the Site)</i>	PRoW users	447106	213747
Viewpoint 3: Public footpath (265/22/10), Kidlington <i>(Within the Site)</i>	PRoW users	448373	214001
Viewpoint 4: Sandy Lane, Kidlington <i>(Adjacent to Site)</i>	Residents and visitors to Kidlington Users of Sandy Lane (motorists and cyclists)	448892	213288
Viewpoint 5: Yarnton Lane (Public Byway) (420/4/10) <i>(Adjacent to Site)</i>	PRoW users	448651	212540
Viewpoint 6: Oxford Canal Walk <i>(Adjacent to Site)</i>	PRoW Users Canal Users	449110	212419
Viewpoint 7: A44, Yarnton <i>(Adjacent to the Site)</i>	Users of the A44 (motorists, cyclists and pedestrians) Residents and visitors to Yarnton	447807	212689
Viewpoint 8: A44, Peartree Hill	Users of the A44 (motorists, cyclists and pedestrians)	449066	211379

Representative Viewpoint Locations	LVIA Receptors	Grid Reference	
		XY-coordinates	
(1km, south east)			
Viewpoint 9: Shakespeare's Way, Yarnton (420/14/20) (1km, south west)	PRoW users walking along the long-distance walking route.	446792	212371
Viewpoint 10: Public footpath (124/2/10), Begbroke (730m, south west)	PRoW users	446668	212883
Viewpoint 11: A44, Campsfield (1km, north west)	Users of the A44 (motorists, cyclists and pedestrians)	446756	214749
Viewpoint 12: Green Belt Way, (237/11/10), Hampton Gay (2.4km, north east)	PRoW users walking along the long-distance walking route.	449484	216113
Viewpoint 13: Public bridleway (260/2/10), Islip (2.4km, east)	PRoW and local road users	451339	214057
Viewpoint 14: Public bridleway (229/9/20)), Gosford and Water Eaton (2.3km, south east)	PRoW users	451319	211719
Viewpoint 15: A44, Begbroke (10m, west)	Users of the A44 (motorists, cyclists and pedestrians)	447145	213416

Supporting Visualisations

15.31 It is proposed to prepare, as part of the supporting material for the LVIA, a number of wireframe visualisations to illustrate the degree of visibility of the Proposed Development from the following representative viewpoints (or comparable locations subject to fieldwork):

- Viewpoint 8 – A44, Peartree Hill;
- Viewpoint 10 – Public footpath (124/2/10), Begbroke;
- Viewpoint 11 – A44, Campsfield; and
- Viewpoint 13 – Public bridleway (260/2/10), Islip.

Assessment of Effects

- 15.32 Medium term effects (Year One, at the start of the operational phase) will be considered separately to the long-term, permanent effects (Year Fifteen once the proposed planting has matured). While the scale of effect may be larger during the earlier part of the operational phase, the duration of effects would be shorter in comparison to the permanent development.
- 15.33 While the proposed landscape strategy is likely to be beneficial in terms of landscape character and/or views over the long term, it may be judged that there will be no discernible differences between the medium and longer term effects (i.e. the scale of effect will be within the same threshold at Year One and Year Fifteen of operation, once the proposed planting has matured). In this instance, it is proposed that only the permanent effects will be considered.
- 15.34 The approach to the LVIA will follow LDA Design's established methodology, which will be included at the end of the LVIA. LDA Design's methodology considers both impacts to landscape character and visual receptors, drawing upon the established and best practice standards, which include:
- Guidelines for Landscape and Visual Impact Assessment (3rd Edition);⁸⁹
 - An Approach to Landscape Character Assessment;⁹⁰
 - Technical Information Note (LI TIN) 05/2017 regarding townscape character;⁹¹
 - Technical Guidance Notes 02/2019 Residential Visual amenity assessment;⁹²
 - Technical Guidance Notes 02-21: Assessing landscape value outside national designations;⁹³
 - Technical Guidance Note 06/19 Visual Representation of development proposals and other recognised guidelines;⁹⁴.
- 15.35 The determination of the baseline (or 'baseline study') identifies those landscape and visual receptors that are likely to be significantly affected, as set out above. These receptors are subsequently assessed in greater detail (via further desk-study and fieldwork) to determine their 'sensitivity' to the Proposed Development. This involves combining judgements made on the 'susceptibility' of the receptor to the specific type of change or development proposed and the 'value' related to that receptor.
- 15.36 The LVIA then determines for each receptor the 'magnitude' and 'significance' of effects that could arise as a consequence of the Proposed Development, setting out a clear description of each effect identified, with a supporting rationale of how each judgment was reached.
- 15.37 The 'magnitude' (of effect) combines judgements about the size and scale of the impact, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term, in duration.
- 15.38 'Significance' indicates the importance or gravity of the effect. The process of forming a judgement as to the degree of 'significance' of the effect is based upon the assessments of 'magnitude' of effects and 'sensitivity' of the receptor to come to a professional judgement of how important this effect is. Identification of which effects are judged to be significant based on the significance thresholds set out within the LVIA methodology.

16 Cumulative Effects

16.1 The EIA Regulations specify the information to be included in an ES (Regulation 18 and Schedule 4) and require that in assessing the effects of a particular development, consideration should be given to cumulative effects. Potential cumulative effects can be categorised into two types:

- Combined effects - occur when two or more different environmental effects from the Proposed Development (e.g. dust, noise, traffic) act together to produce a different level of effect/ impact experienced by a particular receptor. These combined effects (or 'Intra-Project') can be additive or synergistic such that the sum of the impacts can be less or more than the individual impacts (i.e. because they may exacerbate or neutralise one another).
- Cumulative effects - are those that accrue over time and space from a number of different existing or approved development activities and projects in geographical proximity to one another, which individually might be insignificant, but when considered together, could create a significant cumulative effect (also referred to as 'Inter-project' effects).

16.2 The cumulative assessment is important to ensure that the combined impacts of other existing or approved schemes are understood and appropriately considered in decision making. The cumulative effects of the Proposed Development itself, and with other planned or committed development in the local area, will be considered on a topic-by-topic basis and reported in a subsection of each technical ES Chapter, and mitigation measures proposed where necessary.

16.3 Combined effects will be set out in an ES chapter titled 'Effect Interactions'. The approach for both the Effect Interaction assessment and the Cumulative Effects Assessment with other development is outlined below.

Effect Interactions (Intra-Project Effects)

Baseline

16.4 The Effect Interactions assessment focusses on individual receptors that have the potential to be affected by multiple impacts addressed under more than one specialist topic in the EIA as a result of the Proposed Development. Therefore, the baseline for the Effect Interactions assessment will be determined by the results of the individual topic assessments.

Methodology

16.5 There is no consistent guidance or standardised approach to the assessment of Effect Interactions. However, it is recognised that the Proposed Development has the potential to give rise to a variety of impacts upon a number of different receptors some of which may combine to become significant effects.

16.6 Table 16.1 provides a summary matrix showing where it is considered that effect interactions could occur between environmental topics that have been scoped into the ES. For the purposes of the assessment presented within the EIA, where no effect interactions between

environmental topics occur (i.e. Ground Conditions and Contamination and Socio-economics), these topics will be scoped out of further assessment.

Table 16.1: Effect Interactions Summary Matrix

Topic	SE	T	AQ	N/V	GCC	WR/FR	CH*	L/V	B*	CC/GHG
SE		N	N	N	N	N	N	N	N	N
T	N		Y	Y	N	N	Y	Y**	Y	Y
AQ	N	Y		Y	N	N	Y	Y	Y	Y
N/V	N	Y	Y		N	N	Y	Y	Y	Y
GCC	N	N	N	N		N	N	N	N	N
WR/FR	N	N	N	N	N		N	N	Y	Y
CH*	N	Y	Y	Y	N	N		N	N	N
L/V	N	Y	Y	Y	N	N	N		N	N
B*	N	Y	Y	Y	N	Y	N	N		N
CC/GHG	N	Y	Y	Y	N	Y	N	N	N	

Socio-Eco (SE); Transport (T); Air Quality (AQ); Noise + Vibration (N/V); Ground Conditions and Contamination (GCC); Water Resources and Flood Risk (WR/FR); Cultural Heritage (CH); Landscape and Visual (VL); Biodiversity (B); Climate Change and Greenhouse Gases (GHG/CC).

*Technical topic ES chapters will include an effect interaction assessment as standard practice.

**Pedestrian and cycle amenity only.

16.7 Table 16.2 summarises the receptor-based assessment process to be used for the topics identified within Table 16.1 where a potential effect interaction has been identified. The assessment will consider both construction and operational effects.

Table 16.2: Effect Interaction Assessment Process

Step	Description
Step 1: Identify and categorise receptors	Identify all topic sensitive receptors and their geographical locations based on the study areas and Zones of Influence (ZoI) of the respective technical assessments. These will then be categorised by type.
Step 2: Identify impacts	Identify all topic impacts associated with sensitive receptor(s)/ receptor types.
Step 3: Screen receptors and associated impacts	Undertake a screening exercise for the identified receptors and impacts. Effects are screened out from further assessment if there are: <ul style="list-style-type: none"> ▪ No spatial or temporal overlaps in effects; or ▪ Negligible effects.

Step	Description
Step 4: Assess effect interactions	Assess the significance of effect interactions based on professional judgement.

Cumulative Effects Assessment

Baseline

16.8 The existing environment conditions to be considered in the cumulative assessment will be identified in each technical ES chapter.

Methodology

16.9 The cumulative assessment is important to ensure that the combined effects of other existing or approved schemes with the Proposed Development are understood appropriately for decision making. The cumulative effects of the Proposed Development and cumulative schemes in the local area will be considered on a topic-by-topic basis with the cumulative assessment methodologies and any cumulative effects reported in a subsection of each ES chapter, along with proposed mitigation measures where necessary.

16.10A set of screening criteria has been developed building on Cumulative Advice Note 17⁹⁵ to identify which cumulative schemes in the area should be considered in the EIA, as follows:

- Existing and/or approved development projects that are expected to be built-out at the same time as the Proposed Development and with a defined planning and construction programme;
- Within the Zol of the Proposed Development (up to 5km of the Site boundary, dependent on technical topic);
- Submitted EIA development planning applications;
- Other developments which introduce sensitive receptors near to the Site (but are not EIA development);
- Other developments which have received planning consent from the relevant planning authority (granted or resolution to grant); and
- Relevant allocated sites, identified in the Local Plan, where sufficient certainty and information is available.

16.11A planning search was undertaken considering the above criteria and the cumulative schemes identified in scope of the cumulative effects assessment are outlined within Appendix A of this Scoping Report. Each technical topic will consider the full schedule of cumulative schemes in respect of their Zol and assess the cumulative schemes of relevance where they fall within this spatial extent and there is considered a potential for in-combination effects.

17 Non-Significant Topics

Introduction

17.1 The EIA Regulations state that an ES is required to identify only the 'likely significant environmental effects' of a development. This scoping exercise has been guided by the EIA section of the PPG, which states that the ES should be proportionate and focus on the 'main' or 'significant' environmental effects only. Para. 035 of the PPG states:

“Whilst every Environmental Statement should provide a full factual description of the development, the emphasis should be on the “main” or “significant” environmental effects to which a development is likely to give rise. The Environmental Statement should be proportionate and not be any longer than is necessary to assess properly those effects. Where, for example, only one environmental factor is likely to be significantly affected, the assessment should focus on that issue only. Impacts which have little or no significance for the particular development in question will need only very brief treatment to indicate that their possible relevance has been considered.”

17.2 The following topics are considered to be those where 'significant' effects are unlikely to arise as a consequence of the Proposed Development. As such, it is proposed that these issues would not be assessed in detail through the EIA process.

- Light Pollution;
- Wind Microclimate;
- Waste and Materials;
- Vulnerability to Major Accidents and Disasters;
- Human Health;
- Energy and Sustainability;
- Utilities;
- Daylight, Sunlight, Overshadowing and Solar Glare;
- Telecommunications;
- Aviation; and
- Electromagnetic Fields.

17.3 Rationale for proposed to scope these topics out of the ES is provided below. Non-significant issues have also been identified within previous topics sections where relevant.

Light Pollution

17.4 The majority of the Site comprises unlit farmland located on the edge of an urban area. Lighting is present at Begbroke Science Park and the adjacent A44 is lit to highway standards. The Site falls within an Environmental Lighting Classification Zone 3, a suburban area of low district

brightness. Potentially sensitive receptors to changes in lighting at the Site would include ecological and human receptors.

- 17.5 Site inspections and surveys will be carried out to establish the Site's existing baseline lighting conditions and identify any further potential sensitive receptors. A lighting baseline report will be produced that will clarify all the known light pollution issues and will enable a review against the criteria identified by the various lighting / environmental bodies national / local policy and standards.
- 17.6 Lighting during construction will be designed to minimise visual intrusion and avoid and reduce light pollution into the surrounding environment; for example through the sensitive siting and design of operational and safety lighting. These measures will be incorporated into the Framework CEMP.
- 17.7 Construction and operational lighting will be designed with reference to the Airport Safeguarding Advice Note 2: Lighting near Aerodromes⁹⁶ to ensure the safety of all aircraft operating at Oxford Airport to the north of the Site.
- 17.8 An outline external Lighting Strategy will be developed for the completed Proposed Development having regard to existing and future sensitive to allow for the safe use of the external areas within the Site, as well as minimising impacts on existing and future sensitive receptors. The Lighting Strategy will provide a modern, efficient and controlled lighting scheme which incorporates best practice design principles, adhering to recommendations and criteria noted within publication by the Institute of Lighting Professional ('ILP') document 'The Reduction of Obtrusive Light' GN01:21 and other relevant lighting design guidance which is current at the time that reserved matters applications come forward. The Lighting Strategy will form an appendix to the ES and will consider highway, human, ecological and aviation receptors.
- 17.9 Due to the Site location, constraints and proposed design mitigation it is professionally judged that significant light pollution effects can be avoided through good design which would be achieved through implementation of the Lighting Strategy. Further details of lighting within the Proposed Development and illumination impact profiles (if necessary) would be provided at reserved matters stages or through planning conditions. It is therefore considered unlikely that new lighting installations at the Proposed Development would result in significant adverse effects to sensitive receptors and it is proposed that an ES chapter on light pollution be scoped out of the ES.

Wind Microclimate

- 17.10 The proposed scale of the buildings within the Proposed Development would be unlikely to lead to significant effects (comfort or safety) on the pedestrian wind environment of the Site or surrounding area. The majority of buildings within the Proposed Development are likely to be low rise, with the potential for localised mid-rise development around the Begbroke Science Park (up to a maximum of c.5 storeys). These areas of taller development would be located sufficiently distant from existing residential receptors and public footpaths such that it is considered there would be no significant effects on the wind microclimate. As such, it is proposed to scope an assessment of wind microclimate out of the ES.

Waste and Materials

- 17.11 There is a safeguarded waste site within the vicinity of the Site, designated in accordance with policy W11 of the Oxfordshire Mineral and Waste Core Strategy (2017)⁹⁷.
- 17.12 The Proposed Development will generate earthworks, construction waste, although efforts will be made to reuse material on-site where possible. An Operational Waste Management Strategy ('OWMS') and Site Waste Management Plan ('SWMP') will be submitted with the planning application, detailing how waste arising from the completed Proposed Development would be minimised, managed and disposed of in accordance with the relevant local authority requirements. In line with IEMA Guidance on Materials and Waste in EIA⁹⁸, there is certainty about the nature of the necessary mitigation to ensure waste minimisation and management (to be implemented through adherence to the OWMS and SWMP) and significant environmental effects are considered unlikely. As such it is considered appropriate to scope an assessment of waste and materials out of the ES.

Vulnerability to Major Accidents and Disasters

- 17.13 The EIA Regulations (Paragraph 8 of Schedule 4) require an ES to consider the inclusion of *"A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned"*.
- 17.14 Available guidance (IEMA Primer 'Major Accidents and Disasters in EIA'⁹⁹) defines major accidents and disasters as *"man-made and natural events which are considered to be likely, and are anticipated to result in substantial harm that the normal functioning of the project is unable to cope with /rectify"*.
- 17.15 The Proposed Development would not introduce hazardous uses and the most likely foreseeable vulnerability of the Proposed Development with regards to risks of major accidents and /or disasters are related to flood risk, and reprofiling works associated with the historic landfill site and release of ground gas. This would be considered as part of the FRA and drainage strategy and Ground Conditions and Contamination chapters of the ES respectively (see Sections 6 & 7 of this Scoping Report). Risks to fire can be assumed to be low provided the detailed design and fire strategy are developed in line with the latest fire safety guidance.
- 17.16 The Proposed Development would be designed in line with relevant CAA guidance including CAP1096: Guidance to Crane Users¹⁰⁰ and Aerodrome Safeguarding Advice Notes 1-5 2016¹⁰¹ published by AOA and in consultation with Oxford Airport. An Aviation Safeguarding Assessment will be prepared to accompany the planning application.
- 17.17 For these reasons, it is considered unlikely that likely significant environmental effects from the vulnerability of the Proposed Development to major accidents or disasters would arise and this topic is proposed to be scoped out of the EIA.

Human Health

17.18 Where people live and work could have impacts on their health. New developments could potentially have a beneficial or adverse effect on health, particularly in areas of existing poor health conditions. Poor health outcomes could arise from, for example, construction impacts such as dust or pollution from construction traffic. Poor design and access in end uses could also have negative effects on health outcomes. Through appropriate mitigation and design these effects can be managed and potentially result in either neutral or beneficial effects on human health. Positive health outcomes could also arise due to employment, a high quality living environment and access to nature.

17.19 The following assessments within the EIA will consider impacts relevant to the consideration of human health effects:

- Traffic and Transport;
- Socio-Economics;
- Air Quality;
- Noise and Vibration;
- Wind Microclimate; and
- Climate Change and Greenhouse Gases.

17.20 Whilst these assessments do not explicitly refer to health outcomes, some of the impacts identified within them have the potential to affect human health.

17.21 Many of the standards and criteria against which these topics are assessed are based on thresholds which are informed by what is and is not acceptable in terms of human health. For example, air quality considers the impacts of a development in relation to pollutants such as nitrogen oxide (NO₂) and fine particulates (PM₁₀) which are known to have detrimental effects on human health, as well as more generally on the environment. The socio-economic assessment will consider access to essential services, including GP provision as well as the potential benefits associated with access to nature, open space, leisure facilities and employment.

17.22 The Applicant will submit a standalone Health Impact Assessment ('HIA') in support of the planning application. This is in line with the approach set out in the Oxfordshire Health Impact Assessment Toolkit (2021)¹⁰² which notes that an HIA *"is expected to be implemented when Oxfordshire's district council planning departments are determining any 'major development' within their district"*.

17.23 The HIA will consider health issues related to the topics considered within the EIA but will also have a broader scope covering issues that fall beyond the scope of EIA. The scope and methodology of the assessment will be informed by the Oxfordshire Health Impact Assessment Toolkit (2021) **Error! Bookmark not defined.** and the IEMA EIA Guide to Effective Scoping of Human Health¹⁰³ to identify potential health pathways, considering the wider determinants of health. Themes considered will include:

- Traffic and Transport;
- Economy and employment;
- Air quality;

- Noise;
- Healthy food environments;
- Physical activity;
- Crime and anti-social behaviour;
- Education and skills;
- Natural environment;
- Housing; and
- Access to services.

17.24 The HIA will draw on the contents of the EIA, the Parameter Plans, Development Specification, the Framework CEMP, the Design and Access Statement, the Planning Statement, the Energy Statement and any other relevant technical assessment or strategy. If required, the Applicant will prepare mitigation and management strategies to address impacts such as public safety, noise and vibration, air and dust management during both construction and operation. For construction, these management measures will form part of a Framework CEMP, to be submitted with the ES, which will be secured through an appropriately worded planning condition.

17.25 No likely significant effects have been identified in relation to human health. Applying the relevant PPG guidance as to the scope of an ES being proportionate, human health is proposed to be scoped out of the EIA. A standalone HIA will be prepared for the purposes of the planning application and form part of the submission materials.

Energy and Sustainability

17.26 Energy and Sustainability are material considerations relevant to the consideration of the individual planning merits of the application but are not themselves factors that require assessment under Regulation 4(2) of the EIA Regulations 2017 (as amended). Neither 'energy' nor 'sustainability' are aspects of the environment in relation to which a significant effect can be assessed in this sense (i.e. there is no source/receptor/pathway relationship for 'energy' or 'sustainability').

17.27 The energy strategy for the Proposed Development will likely comprise the use of heat pumps and renewable energy sources which is targeted to generate the majority of the Proposed Development's energy demand. The effects of the energy demand associated with the operational Proposed Development (including building and transport emissions) will be assessed by the Climate Change and Greenhouse Gas ES chapter.

17.28 Physical aspects of the Sustainability Strategy, such as sustainable travel, renewable energy generation, sustainable urban drainage, water use reduction, habitat creation, access to nature etc are being embedded within the Proposed Development and, as such, would be assessed by all ES topic chapters where relevant. As such, all technical assessments included within the ES will inherently test the principal sustainability design features sought as part of the planning application and the ES will not include a separate chapter on these aspects.

17.29 The Department of Communities and Local Government's (DCLG) consultation paper on EIA Good Practice (2006) states:

“there is no requirement to include a sustainability appraisal within the Environmental Statement. If such an assessment is required by the Local Planning Authority, it should be provided as a separate document supporting the planning application.”

17.30 The outline planning application will, however, be supported by standalone Energy and Sustainability Statements for the purposes of the determination of the planning application.

Utilities

17.31 The Proposed Development will result in an increase in demand on the grid network in relation to power and water utilities. A Preliminary Utilities Assessment undertaken by Jubb Consulting Engineers in February 2019 concluded that off-site reinforcements would be required for electricity and gas utilities in order to serve redevelopment on the scale of the Proposed Development. The assessment also found that a 10-inch strategic Thames Water trunk main occupies the A44 and exit ramp on Sandy Lane from which a connection to service the Proposed Development may be viable. Consultation with relevant statutory bodies will be undertaken to ensure any necessary reinforcements are undertaken to ensure there will be sufficient electricity, gas and clean water supplies to the Proposed Development and existing users and also to ensure any necessary diversion of overhead lines and underground infrastructure will ensure minimal disruption.

17.32 Effects of potable water demand and increased foul water will be considered in the Water Resources and Flood Risk Chapter. Physical works associated with necessary upgrades and connections to other utilities will be considered in each topic chapter where appropriate.

17.33 Significant effects on utilities are not anticipated and where relevant to topics, effects associated with potable and foul water, and physical utility connections will be assessed in the relevant topic chapters of the ES. As such, it is proposed that an ES chapter on utilities be scoped out of the ES.

Daylight, Sunlight, Overshadowing and Solar Glare

17.34 The scale and massing of the proposed buildings within the Proposed Development are not considered likely to lead to likely significant effects to residential properties in the surrounding area which are sensitive to daylight and sunlight effects. There would be sufficient distance between the built development on the Site and the existing residential receptors such that likely significant impacts at existing receptors would be avoided.

17.35 Due to the location of built development and buffer zones adjacent to sensitive ecological habitats, it is considered that likely significant overshadowing effects on receptors, such as Rushy Meadows SSSI, Oxford Canal and neighbouring residential gardens would also be avoided.

17.36 Good design principles will be applied to the detailed design of the Proposed Development at reserved matters stage to ensure that levels of daylight, sunlight and overshadowing are acceptable for receptors within the Site, including existing uses at the Begbroke Science Park, new residential properties and other uses and amenity spaces.

17.37 There is no specific criterion for assessing the significance of effects associated with solar glare or glint/dazzle which could arise from the use of photovoltaic (PV) panels within the Proposed Development. Sensitive receptors are likely to include aircraft, road users, train drivers, as well as on-Site vehicle operators. Solar glare or glint to these receptors due to the use of reflective materials or PVs could potentially cause visual distraction which could lead to safety issues.

17.38 The emerging design of the Proposed Development is unlikely to incorporate any significantly reflective components which could lead to incidences of solar glare. Subject to confirmation upon design completion, no significant solar glare effects are likely and this topic would be scoped out of the ES.

Telecommunications

17.39 Oxford Airport is located approximately 1m north of the Site boundary. As no navigational aids or major telecommunication relay stations have been identified in the immediate vicinity of the Site, it is considered unlikely that there will be any significant telecommunications effects as a result of the Proposed Development. Accordingly, it is proposed that this issue will not be considered further within the EIA process.

17.40 EIA best practice is increasingly recognising that telecommunication issues do not raise environmental considerations which need to be addressed as part of the EIA process and can be addressed through standard mitigation measures, such as adjustment of satellite dishes. Given this, it is considered that telecommunications can be scoped out of the EIA.

Aviation

17.41 Development near to airports and aerodromes have the potential to create obstacles to existing standard and emergency flight landing and take-off procedures and operations. Accordingly, safeguarded zones are established around airports and aerodromes to ensure new developments do not restrict standard and emergency flight operation procedures.

17.42 Oxford Airport is located approximately 1m north of the Site boundary and the Site is located within the Safeguarded Zone. A series of safeguarding advice notes have been issued by the Airport Operators Association ('AOA') which are issued to ensure the safety of aircraft and their occupants when in the vicinity of an airport by controlling potentially hazardous development and activity around it.

17.43 The height of the completed building height of up to c.5 storeys is not considered to have an impact on the safety of flying operations at Oxford Airport and is therefore scoped out of further assessment in the EIA. This would be confirmed through consultation with the Oxford Airport.

17.44 The Aviation Safeguarding Assessment will consider the potential impacts of the Proposed Development in terms of:

- radar and other electronic aids to air navigation;
- aeronautical lighting and lighting of obstacles;
- wildlife hazard management (e.g. bird strike risk);

- construction management (e.g. use of cranes); and
- Public Safety Zones.

17.45 Accordingly, no likely significant environmental effects on aviation use is expected and, as such, it is proposed that this will be scoped out of the ES.

Electromagnetic Fields

17.46 Sources of electro-magnetic fields which may be delivered as part of the Proposed Development would be designed in line with relevant health and safety, and engineering standards in force at the time, e.g. electricity sub-stations. It is therefore reasonable to assume that these best practice measures would avoid likely significant environmental effects arising and, accordingly it is proposed that this issue would be scoped out of the ES.

Appendix A – Cumulative Schemes

Figure 1 shows the cumulative schemes proposed for consideration within the ES.

Figure 1: Cumulative Schemes

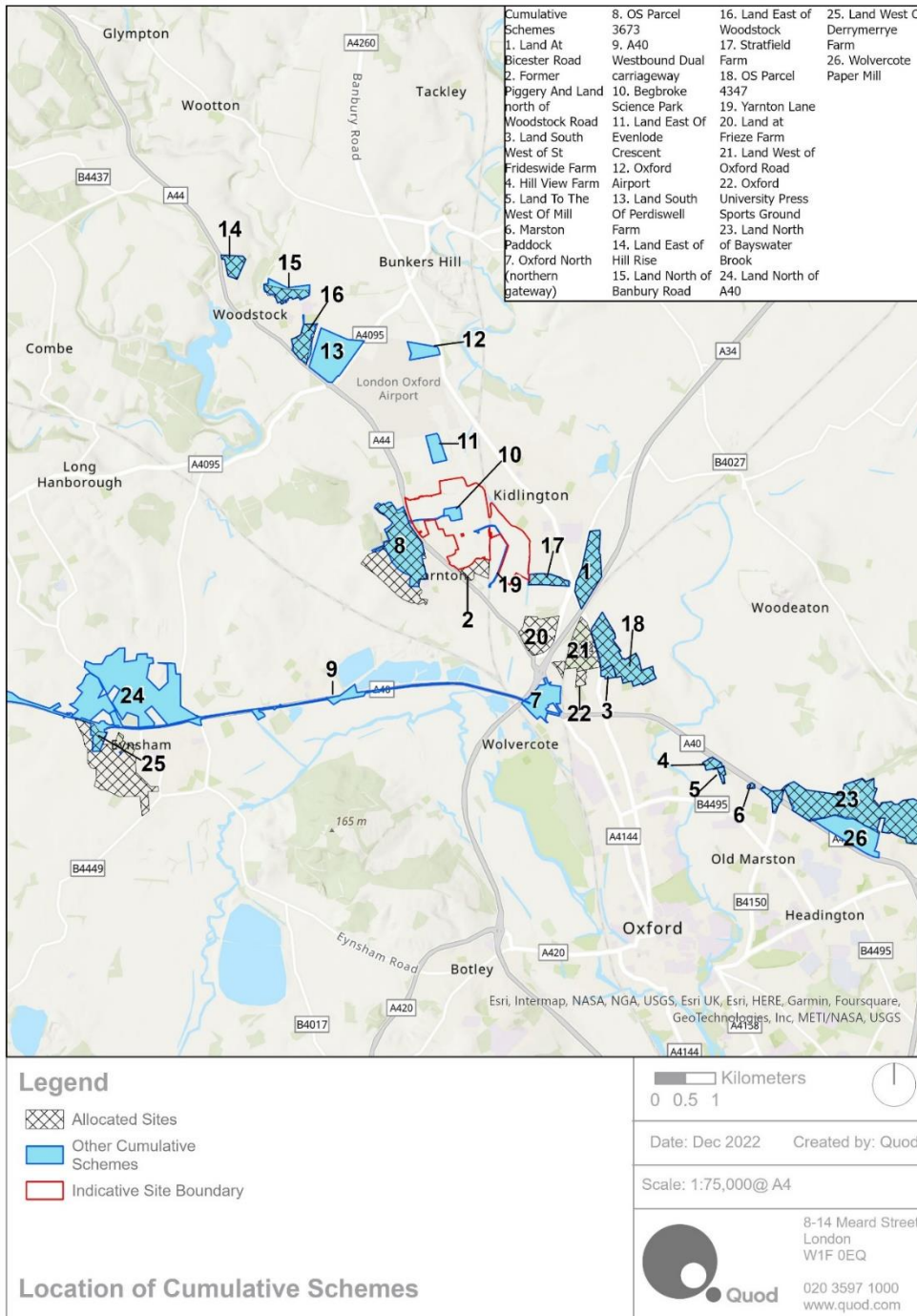


Table 1 overleaf outlines the cumulative schemes proposed to be considered in the cumulative effects assessment as part of the EIA process. Schemes in blue have been granted planning consent, schemes in green are unsubmitted or pending approval, and purple schemes are site allocations with no planning application.

Table 1: Cumulative Schemes

No.	LPA Ref. No.	Site Allocation	Site Address	Units	Proposals	Status/Date	Approx. Distance from Site Boundary	Timing Assumptions
1	Cherwell 22/00747/OUT	Strategic Development Site - Policy PR7a - no. of units 430	Land at Bicester Road, Kidlington	370	Outline planning application for the development of up to 370 homes, public open space (including play areas and woodland planting), sports pitches and pavilion, drainage and engineering works, with all matters reserved (appearance, landscaping, layout and scale) except for vehicular and emergency accesses to Bicester Road	Outline planning application submitted 21/03/2022.	<1km east	Start on site Q2 2024, First sales – Q4 2024, Completion by Q1 2031.
2	Cherwell 21/00758/SCOP	Strategic Development Site - Policy PR8	Former Piggery and Land North of Woodstock Road, Yarnton	300	Scoping Opinion - Up to 300 Residential Units, access from A44 and Open Space/infrastructure	EIA Scoping opinion issued – 30/07/2021	0km	Construction dates unknown.
3	Oxford City Council 21/01449/FUL	Residential development site - Policy SP24 – No. of units 125.	Land South West of St Frideswide Farm, Banbury Road, Oxford, OX2 8EH	134	Full planning permission for 134 dwellings (use class C3), informal open space including community pavilion, seating and children's play areas, hard and soft landscape and sustainable drainage areas, access, associated roads and infrastructure, car and cycle parking, bin storage, pumping station, substation and associated engineering works.	Approved – 25/08/2022	2km east	Construction dates unknown. Due to come forward between 2022 and 2023.

No.	LPA Ref. No.	Site Allocation	Site Address	Units	Proposals	Status/Date	Approx. Distance from Site Boundary	Timing Assumptions
4	Oxford City Council 20/03034/FUL	Allocated for residential development - policy SP25 in the adopted Oxford Local Plan 2036.	Hill View Farm, Mill Lane, Marston, Oxford, OX3 0QG	159	Demolition of existing buildings and construction of 159 dwellings, associated roads and infrastructure, drainage and landscaping (amended plans)	Approved – 25/03/2022	4km south east	Construction dates unknown. Due to come forward 2022 – 2023
5	Oxford City Council 21/01217/FUL	Allocated for residential development as policy SP26 in the adopted Oxford Local Plan 2036.	Land to the West of Mill Lane, Marston, Oxford, OX3 0QA	80	Erection of 80 residential dwellings (use class C3) formed of 13 one-bedroom apartments and 28 two-, 35 three- and 4 four-bedroom houses with associated public open space, access and landscaping (Amended plans).	Approved - 25/03/2022	5km south east	Construction dates unknown. Due to come forward 2022 – 2023
6	Oxford City Council 21/02580/FUL	40 homes on an allocated site (Policy SP23) within the adopted Local Plan.	Marston Paddock, Butts Lane, Oxford, OX3 0QN	40	Full planning permission for the erection of 40 residential dwellings (Class C3), access arrangements and public open space, landscaping, associated infrastructure and works including pedestrian and cycle routes	Approved – 22/07/2022	5km south east	Construction dates unknown. Due to come forward 2022 – 2023
7	Oxford City Council 18/02065/OUTFUL	N/A	Oxford North (Northern Gateway). Land Adjacent	480	Hybrid planning application comprising: (i) Outline application (with all matters reserved save for "access"), for the	Approved – 23/03/2021	2km south	2021 aerial photography - no

No.	LPA Ref. No.	Site Allocation	Site Address	Units	Proposals	Status/Date	Approx. Distance from Site Boundary	Timing Assumptions
			to A44, A40, A34 and Wolvercote Roundabout Northern By-Pass Road, Wolvercote, Oxford, OX2 8JR		erection of up to 87,300 sqm (GIA) of employment space (Use Class B1), up to 550 sqm (GIA) of community space (Use Class D1), up to 2,500 sqm (GIA) of Use Classes A1, A2, A3, A4 and A5 floorspace, up to a 180 bedroom hotel (Use Class C1) and up to 480 residential units (Use Class C3), installation of an energy sharing loop, main vehicle access points from A40 and A44, link road between A40 and A44 through the site, pedestrian and cycle access points and routes, car and cycle parking, open space, landscaping and associated infrastructure works. Works to the A40 and A44 in the vicinity of the site. (ii) Full application for part of Phase 1A comprising 15,850 sqm (GIA) of employment space (Use Class B1), installation of an energy sharing loop, access junctions from the A40 and A44 (temporary junction design on A44), construction of a link road between the A40 and A44, open space, landscaping, temporary car parking (for limited period), installation			construction started. 4 phases planned over 10 year period - assumed worst case start date.

No.	LPA Ref. No.	Site Allocation	Site Address	Units	Proposals	Status/Date	Approx. Distance from Site Boundary	Timing Assumptions
					of cycle parking (some temporary for limited period), foul and surface water drainage, pedestrian and cycle links (some temporary for limited period) along with associated infrastructure works. Works to the A40 and A44 in the vicinity of the site.			
8	Cherwell 21/03522/OUT	Strategic Development Site - Policy PR9 - no. of Units 540	OS Parcel 3673, Adjoining and West Of 161 Rutten Lane, Yarnton	540	The erection of up to 540 dwellings (Class C3), up to 9,000sqm GEA of elderly/extra care residential floorspace (Class C2), a Community Home Work Hub (up to 200sqm)(Class E), alongside the creation of two locally equipped areas for play, one NEAP, up to 1.8 hectares of playing pitches and amenity space for the William Fletcher Primary School, two vehicular access points, green infrastructure, areas of public open space, two community woodland areas, a local nature reserve, footpaths, tree planting, restoration of historic hedgerow, and associated works. All matters are reserved, save for the principle access points.	Submitted – 14/10/2021	80m west	It is anticipated that works associated with the construction phase of the development will commence in 2022 and conclude in 2028.

No.	LPA Ref. No.	Site Allocation	Site Address	Units	Proposals	Status/Date	Approx. Distance from Site Boundary	Timing Assumptions
9	West Oxfordshire District Council 22/02404/CC3REG	N/A	The A40 carriageway from the existing Hill Farm junction at Witney to the Eynsham Park and Ride site, Westbound Oxfordshire	N/A	The dualling of approximately 3.2km of the A40 carriageway from the existing Hill Farm junction at Witney to the Eynsham Park and Ride site (R3.0057/19) including the construction of two new roundabouts.	Submitted 25/08/2022	2km south west	Construction dates unknown.
10	Cherwell District Council 18/00803/OUT, as amended by 21/01699/NMA 21/03150/REM, as amended by 22/01610/NMA		Begbroke Science Park, Begbroke Hill, Begbroke, Kidlington, OX5 1PF	N/A	Outline planning permission, with all matters except for access reserved for subsequent approval, for up to 12,500m ² of B1a / b / c and ancillary D1 floor space, retention of and improvements to the existing vehicular, public transport, pedestrian and cycle access including internal circulation routes; associated car parking including re-disposition of existing car parking; associated hard and soft landscape works; any necessary demolition (unknown at this stage); and associated drainage,	Approved 17/09/2018	0km	Unknown. Assumed to commence in 2023 with completion in 2025.

No.	LPA Ref. No.	Site Allocation	Site Address	Units	Proposals	Status/Date	Approx. Distance from Site Boundary	Timing Assumptions
					infrastructure and ground re-modelling works.			
11	Cherwell 14/02067/OUT	N/A	Land East of Evenlode Crescent and South of Langford Lane, Kidlington	N/A	New build Technology Park comprising 40,362 sqm. of office, research and development, laboratory, storage and ancillary space.	Approved 10/10/2016	<1km north	2021 aerial photography confirm construction started
12	Cherwell District Council 20/03585/CLUP		Oxford Airport, Langford Lane, Kidlington, OX5 1RA	N/A	Certificate of Lawful Development in connection with site preparation works including the removal of existing surface infrastructure and incidental structures. Erection of an aircraft hangar extending to approximately 7,111 sqm (including approximately 848 sqm of ancillary office accommodation). The dimensions of the hangar are approximately 138.6m length, 44.2m width, and 16.6m (maximum) height. Provision of an estate road to provide land-side vehicular access to the new hangar from the south. To include 38 car parking spaces. Provision of an extended area of hardstanding (apron)	Approved 09/02/2021	1.1km north	Programme unknown. Assumed to commence in 2023 and complete in 2030.

No.	LPA Ref. No.	Site Allocation	Site Address	Units	Proposals	Status/Date	Approx. Distance from Site Boundary	Timing Assumptions
					to the west (airside) of the proposed hangar extending to approximately 1.24ha. Associated surface water drainage and landscape works including the erection of new secure boundary fencing.			
13	Cherwell 22/01715/OUT	N/A	Land South of Perdiswell Farm, Shipton Road, Shipton On Cherwell	500	Erection of up to 500 dwellings with associated access, open space and infrastructure	Submitted 09/06/2022	2km north west	It is envisaged that construction will start on site in spring 2023 and be completed by 2034.
14	West Oxfordshire District Council 21/00189/FUL	Policy EW4 - 120 homes - non strategic	Land East of Hill Rise, Woodstock	180	Hybrid planning application consisting of full planning permission for 48 dwellings, 57 sqm of community space (Class E), a parking barn, means of access from the A44, associated infrastructure, open space, engineering and ancillary works; outline planning permission for up to 132 dwellings, up to 57 sqm of community space (Class E), a parking barn, with associated infrastructure,	Submitted 13/09/2022	5km north west	Construction dates unknown.

No.	LPA Ref. No.	Site Allocation	Site Address	Units	Proposals	Status/Date	Approx. Distance from Site Boundary	Timing Assumptions
					open space, engineering and ancillary works (amended).			
15	West Oxfordshire District Council 21/00217/OUT	Policy EW5 – allocated for 180 units	Land North of Banbury Road, Woodstock	235	Outline planning application with all matters reserved except for means of access for up to 235 dwellings with community space and car barns together with associated works (Amended).	Submitted 11/11/2021	4km north west	Construction estimated to start in 2021 and finish in 2026
16	West Oxfordshire District Council 18/02574/RES	Policy EW3 – allocated for 300 units	Land East of Woodstock Oxford Road, Woodstock	254	Reserved Matters application for landscaping, appearance, scale, access and layout for the construction of 254 dwellings together with 884sqm (GIA) of class uses A1, A2, B1 and D1 floorspace and associated infrastructure, engineering and ancillary works including provision of public open space and formation of accesses. (Amended plans).	Approved - 06/06/2019	3km north west	The scheme will take up to 5 years to construct. Aerial photography from 2021 indicates that construction has started
17	Cherwell 22/01611/OUT	Policy PR7b - Nature conservation Area - no. of Units120	Stratfield Farm, 374 Oxford Road, Kidlington, OX5 1DL	118	Outline planning application for up to 118 no dwellings (all matters reserved except for access) with vehicular access from Oxford Road	Submitted 30/05/2022	20m east	Construction dates unknown

No.	LPA Ref. No.	Site Allocation	Site Address	Units	Proposals	Status/Date	Approx. Distance from Site Boundary	Timing Assumptions
18	Cherwell 21/01635/SCOP	Strategic Development Site - Policy PR6a - no. of Units 690	OS Parcel 4347, East of Pipal Cottage, Oxford Road, Kidlington	690	Scoping Opinion - proposal comprises the development of 690 new homes, a two form-entry primary school, a local centre, associated infrastructure including public open space, drainage and engineering works	EIA Scoping Opinion (09/06/2021)	<1km south east	It is anticipated that the site preparation and infrastructure provision will commence in 2023/24, with development progressing through to 2027/28.
19	Cherwell 22/03054/SO	Within Policy PR8 allocated site	Yarnton Lane Level Crossing and Sandy Lane Level Crossing	N/A	Network Rail plans to upgrade the Sandy Lane Crossing and footpath. Initial Ecology surveys have been carried out.	EIA Screening Opinion (27/10/2022)	0km	Application expected to be submitted in Spring 2023.
20	N/A	CDC Policy PR6c	Land at Frieze Farm	N/A	Strategic Development Site - Policy PR6c (reserved site for replacement Golf course) Land at Frieze Farm (30 hectares) will be reserved for the potential construction of a golf course should	Site allocation. No planning application/ permission present	5-6km south east	2031

No.	LPA Ref. No.	Site Allocation	Site Address	Units	Proposals	Status/Date	Approx. Distance from Site Boundary	Timing Assumptions
					this be required as a result of the development of Land to the West of Oxford Road under Policy PR6b.			
21	N/A	CDC Policy PR6b	Land West of Oxford Road	670	Strategic Development Site - Policy PR6b Construction of 670 dwellings (net) on 32 hectares of land. Land to be reserved within the site to facilitate improvements to the existing footbridge over the railway on the western boundary of the site to make it wheel chair and cycle accessible and so improve links to Oxford City's allocated 'Northern Gateway' site.	Site allocation. No planning application/ permission present	within 1-2km south west	2031
22	N/A	Policy SP52	Oxford University Press Sports Ground	130	Residential development and public open space at Oxford University Press Sports Grounds. Some complementary B1 employment would also be suitable. The minimum number of homes to be delivered is 130. Other complementary uses will be considered on their merits.	Site allocation. No planning application/ permission present	5-6km south east	2036
23	South Oxfordshire P22/S3420/SCO	Policy STRAT13	Land North of Bayswater Brook, Oxford	1,450	Land within the strategic allocation at Land North of Bayswater Brook will be developed to deliver approximately 1,450 new homes and supporting	EIA Scoping Opinion (04/11/2022)	>6km south east	2035

No.	LPA Ref. No.	Site Allocation	Site Address	Units	Proposals	Status/Date	Approx. Distance from Site Boundary	Timing Assumptions
					services and facilities within the plan period.			
24	West Oxfordshire District Council 20/01734/OUT		Land North of A40, Section from Barnard Gate to Eynsham Roundabout, Eynsham	2,200	Outline application with means of access for a mixed-use Garden Village, comprising residential, retail, food and drink, health and community facilities, hotel, class B1, B2 and B8 employment uses, education provision, burial ground, public open space with sports pitches together with ancillary facilities, landscaping and associated infrastructure and works	Submitted 03/07/2020	4.9km south west	Commence in 2022. Completion in 2035
25	West Oxfordshire District Council 20/03379/OUT	Policy EW2 – allocated for 1,000 homes	Land West of Derrymerrye Farm, Old Witney Road, Eynsham	180	Outline planning application (with all matters reserved except for access) for residential development together with open space, landscaping, parking and all associated infrastructure and engineering works	Submitted 17/12/2020	6km south west	Under construction. First occupation expected in 2022 and full completion in 2023.
26	Oxford City Council 13/01861/OUT		Wolvercote Paper Mill, Mill Road, OX2 8PR	190	Outline application (seeking means of access) for up to 190 residential units, employment space, community facilities, public open space and ancillary services and facilities.	Approved – 21/09/2017	2.3km south	Under construction. Assumed completion in 2023.

Appendix B – Structure of ES Technical Chapters

Introduction

The introduction will provide a brief summary of what is considered in the chapter and will state the author and/or relevant technical contributor and their competence.

Legislation, Planning Policy and Guidance

This section will summarise the relevant planning policy, legislation and guidance that form the context for the topic in bullet point form to minimise length. A detailed review of relevant planning policy, legislation and guidance will be provided as an Appendix to the chapter or within the supporting technical report within Volume II of the ES.

Assessment Methodology

The assessment methodology section in each chapter will provide an explanation of methods used in undertaking the technical assessment and the prediction of effects. Reference will be made to published standards, professional guidelines and best practice of relevance to the topic.

This section will also describe any topic-specific significance criteria applied in the assessment, particularly where these differ from common or generic criteria applied elsewhere in the ES. However, wherever possible, a common scale and language for assessing effects will be applied.

Consultation undertaken as part of the assessment to agree scope or methodology will be set out in the chapter. Where appropriate, it will describe the assumptions and limitations related to the assessment of the topic and any constraints to undertaking the assessment.

Baseline Conditions

A description of the environmental conditions that exist in the absence of the Development both now and, where relevant, those that are projected to exist in the future will be provided. The results of baseline surveys and desktop research will be summarised in this section.

Relevant receptors to the specific topic-based effects (e.g. noise, air quality) will be described, together with an indication of the relative sensitivity of these receptors to such effects. Comment will also be made on the future baseline conditions as required by the EIA Regulations.

Embedded and Standard Mitigation Measures

This section will present the embedded design and / or management measures that will form part of the Proposed Development to avoid, prevent, reduce or offset environmental effects. These measures will be clearly defined to ensure transparency and to ensure that the impact assessment does not assess a scenario that is unrealistic in practice.

Construction

This section will present the assessment of potential effects/ impacts that are predicted to occur during the construction phase. Additional mitigation additional measures, over and above those included in the Framework CEMP will also be presented, together with residual effects.

Completed Development

This section will present the assessment of potential effects that are predicted to occur once the Proposed Development is complete and occupied together with the mitigation and monitoring measures, and residual effects.

Cumulative Effects

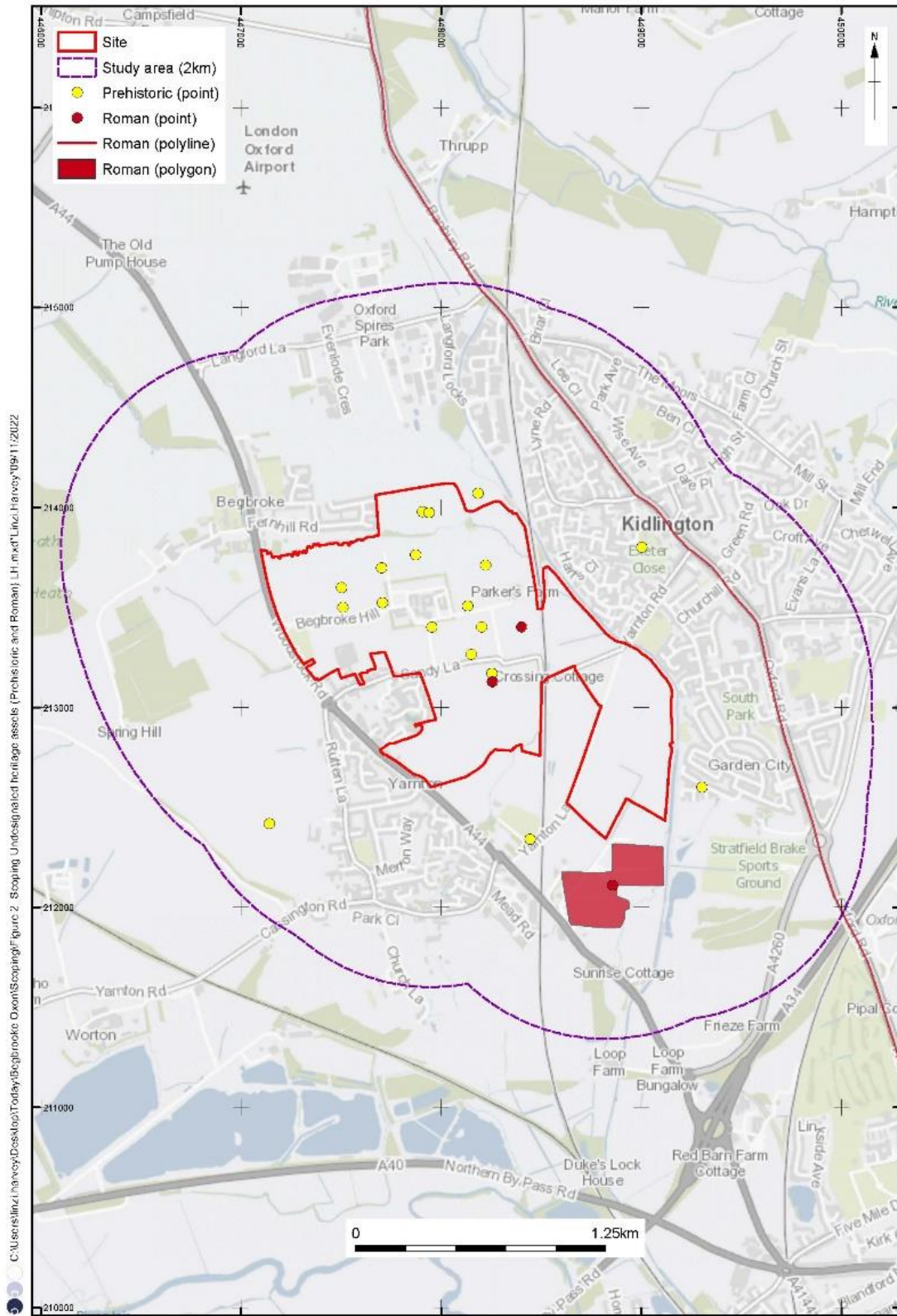
This section will present the cumulative effects assessment of the Proposed Development in cumulation with the cumulative schemes during both the construction and operational phases of the Proposed Development together with the proposed mitigation measures and residual effects.

Summary

This section will include a tabulated summary of the potential effects, mitigation measures and residual effects. The potential mechanisms by which the proposed mitigation measures will be secured and implemented (e.g. CEMP, suitably worded planning conditions or suitably worded Section 106 obligations) will be specified, where appropriate.

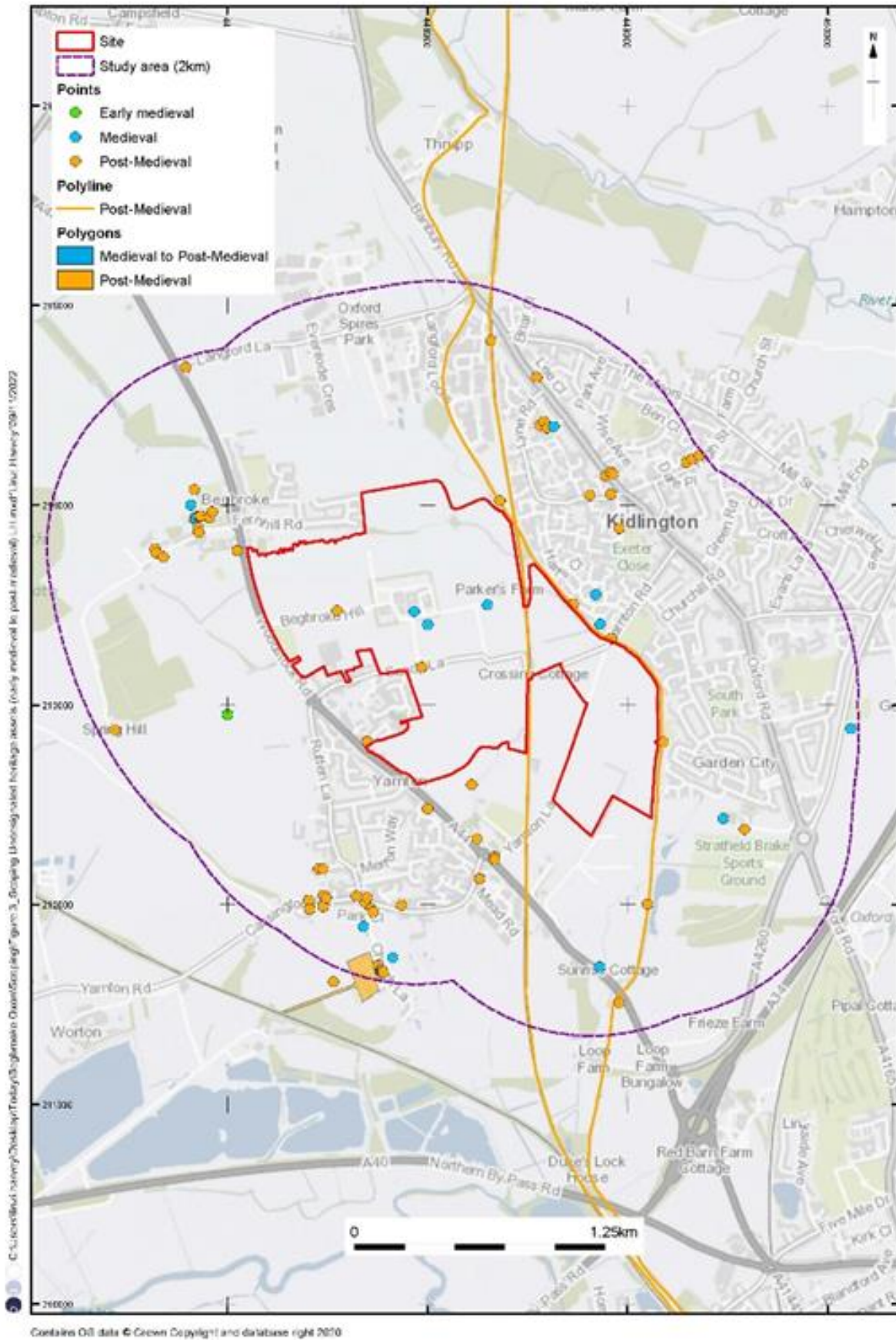
Appendix C – Cultural Heritage Figures

Figure 1: Undesignated heritages assets (Prehistoric and Roman)



Contains OS data © Crown Copyright and database right 2020

Figure 2: Undesignated heritage assets (Medieval and Post-Medieval)



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