UNIVERSITY OF CAMBRIDGE

North West Cambridge

Future Phases of Eddington

September 2025



Environmental Impact Assessment
Volume 1: Environmental Statement Main Report

TRIUM

North West Cambridge Masterplan

Environmental Impact Assessment

Volume 1: Environmental Statement Main Report

Prepared for:
The University of Cambridge

Date:
September 2025

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Chapter 1: Introduction

TRIUM

INTRODUCTION

1.1 This Environmental Statement ('ES') has been prepared on behalf of The University of Cambridge (hereinafter referred to as 'the Applicant') in accordance with the statutory procedures set out in the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended 2020[1] 'the EIA Regulations'.

1.2 The Applicant is seeking outline planning permission for the redevelopment of an area of land located to the north-west of Cambridge, Cambridgeshire (hereinafter referred to as the 'site'). The site covers a total area of approximately 114 hectares (ha) and is located across the administrative boundary of South Cambridgeshire District Council (SCDC) and Cambridge City Council (CCC) and are therefore the Local Planning Authorities (LPAs) for the site. The Greater Cambridge Shared Planning Service ('GCSPS') manages planning services on behalf of SCDC and CCC.

1.3 The site location is shown on Figure 1.1 and the planning application red line boundary is shown on Figure 1.2.

1.4 The scheme proposals (hereafter referred to as 'the Proposed Development') comprises demolition of existing buildings and structures and the phased construction of a residential-led mixed-use development. The Proposed Development will comprise:

- Living Uses, comprising residential floorspace (Use Class C3/C4, up to 3,800 dwellings), student accommodation (Sui Generis), Co-living (Sui Generis) and Senior Living (Use Class C2);
- Flexible Employment Floorspace (Use Class E(g) / Sui Generis research uses);
- Academic Floorspace (Use Class F1);
- Floorspace for supporting retail, nursery, health and indoor sports and recreation uses (Use Class E (a) – E (f));
- Public open space, public realm, sports facilities, amenity space, outdoor play, allotments and hard and soft landscaping works alongside supporting facilities;
- Car and cycle parking, formation of new pedestrian, cyclist and vehicular accesses and means of access and circulation routes within the site;
- Highway works;
- Site clearance, preparation and enabling works; and
- Supporting infrastructure, plant, drainage, utility, earthworks and engineering works.

1.5 A detailed description of the Proposed Development is presented within **ES Volume 1, Chapter 4: The Proposed Development**. Further details on the demolition and construction works are presented within **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**.

1.6 Environmental Impact Assessment ('EIA') is a process carried out which examines available environmental information to ensure that the likely significant environmental effects of certain projects are identified and assessed before a decision is taken on whether a project is granted planning permission. This means environmental issues can be identified at an early stage and projects can then be designed to avoid or to minimise adverse environmental effects, and appropriate mitigation and monitoring can be implemented.

1.7 Given the scale and nature of the Proposed Development, it is considered to constitute 'EIA Development' under the EIA Regulations, and so an EIA has been undertaken and reported upon within this ES.

1.8 In accordance with the EIA Regulations (see '*The Legislative Requirements for an EIA'* section of this ES chapter), this ES describes the likely significant environmental effects of the Proposed Development during the enabling, demolition and construction works, and on subsequent completion and occupation. The ES is designed to inform readers of the nature of the scheme proposed, the likely significant environmental and socio-economic effects and the measures proposed to protect the environment.

1.9 The ES also describes the consultation process which serves to focus the environmental studies and to identify specific issues, which may require further investigation as part of the EIA. The Applicant's consultant team has engaged with GCSPS officers regarding, and prior to preparation of, this ES. In addition, summary of wider consultation prior to submission of the planning application is provided in the Planning Statement and Statement of Community Involvement.

Table 1.1 Glossary of Terms

Term	Definitions
The Applicant	University of Cambridge (UoC) are the 'Applicant' and will be submitting the planning application for the Proposed Development.
The site	The site is a 114 ha area of land shown by the redline planning application boundary in Figure 1.2
The Proposed Development (Outline Planning Application (OPA))	Outline planning application (all matters reserved except for means of access to the public highway) for a phased mixed use development, including demolition of existing buildings and structures, such development comprising: • Living Uses, comprising residential floorspace (Class C3/C4, up to 3,800 dwellings), student accommodation (Sui Generis), Co-living (Sui Generis) and Senior Living (Class C2); • Flexible Employment Floorspace (Class E(g) / Sui Generis research uses); • Academic Floorspace (Class F1); and • Floorspace for supporting retail, nursery, health and indoor sports and recreation uses (Class E (a) – E (f)). • Public open space, public realm, sports facilities, amenity space, outdoor play, allotments and hard and soft landscaping works alongside supporting facilities; • Car and cycle parking, formation of new pedestrian, cyclist and vehicular accesses and means of access and circulation routes within the site; • Highway works; • Site clearance, preparation and enabling works; • Supporting infrastructure, plant, drainage, utility, earthworks and engineering works.
2013 Outline Planning Permission (OPP)	Outline Planning Permission (OPP) was granted in 2013 (11/1114/OUT / S/1886/11) for the following: *"Proposed development comprising up to 3,000 dwellings; Up to 2,000 student bedspaces; 100,000 sq.m. employment floorspace, of which: up to 40,000 sq.m. commercial floorspace (Class B1(b) and sui generis research uses) and at least 60,000 sq.m. academic floorspace (Class D1); up to 5,300 sq.m. gross retail floorspace (Use Classes A1 to A5) (of which the supermarket is 2,000 sq.m. net floorspace); Senior Living, up to 6,500sq.m. (Class C2); Community Centre; Indoor Sports Provision; Police; Primary Health Care; Primary School; Nurseries (Class D1); Hotel (130 rooms); Energy Centre; and associated infrastructure including roads (including adaptions to Madingley Rd and Huntingdon Rd), pedestrian, cycle and vehicle routes, parking, drainage, open spaces and earthworks."*
2012 ES	The 2013 OPP was accompanied by an Environmental Statement (ES) dated 2011.
Phase 1	A portion of the 2013 OPP has been built out, with a number of other Phase 1 'plots' currently under construction (subject to the planning permission, as granted under outline permissions: 11/1114/OUT / S/1886/11 and Section 73 (s73) Permissions: 13/1402/S73 / S/2036/13/VC). These now comprise of existing buildings and form part of the baseline for assessment purposes and are assessed as sensitive receptors as relevant.
The OPP site	The site boundary as per the 2013 OPP, inclusive of Phase 1. The redline boundary for this planning application excludes certain areas within the OPP site.

[1] *His Majesty's Stationery Office (HMSO) 2017. The Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (amended in 2018 and 2020).*

PLANNING CONTEXT AND HISTORY

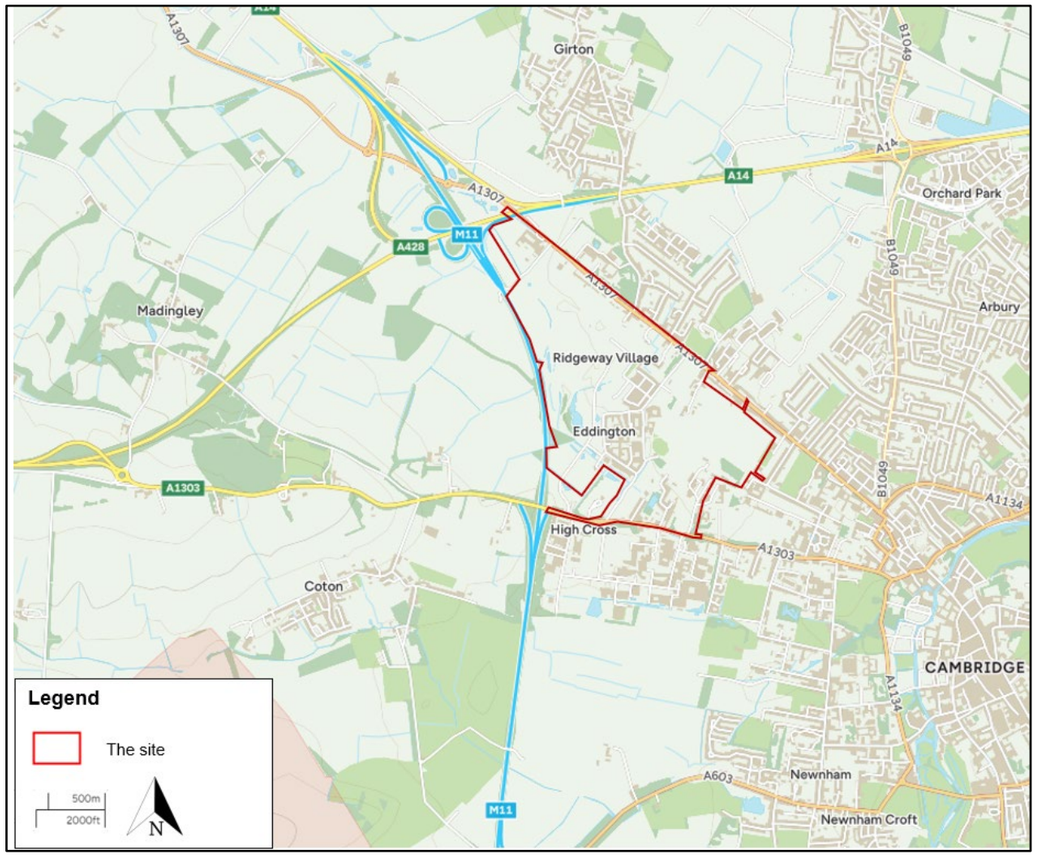
1.10 The site is designated as a Major Development site within the Cambridge Local Plan and the South Cambridgeshire local Plan, and is allocated as a Major Development site within the North West Cambridge Area Action Plan.

1.11 The site forms part of the North West Cambridge Development Masterplan redevelopment site consented in 2013 (Planning References: 11/1114/OUT / S/1886/11 / s73 Permissions: 13/1402/S73 / S/2036/13/VC), herein referred to as the '2013 Outline Planning Permission (OPP)'. A portion of the 2013 OPP, known as 'Phase 1', has been built out, with a number of other Phase 1 plots currently under construction. The whole of the 2013 OPP site is herein after referred to as the 'OPP site', while the redline boundary for the planning application excludes certain areas within this OPP site.

1.12 The 2013 OPP was granted subject to a condition that applications for approval of all the reserved matters shall be made to the Local Planning Authority before the expiration of 10 years in respect of any residential development, and 20 years for all other uses, from the 22 February 2013. Given that the time limit for submission of reserved matters for any further residential development has expired, the Applicant is submitting a new outline planning application for the development of the remainder of the OPP site.

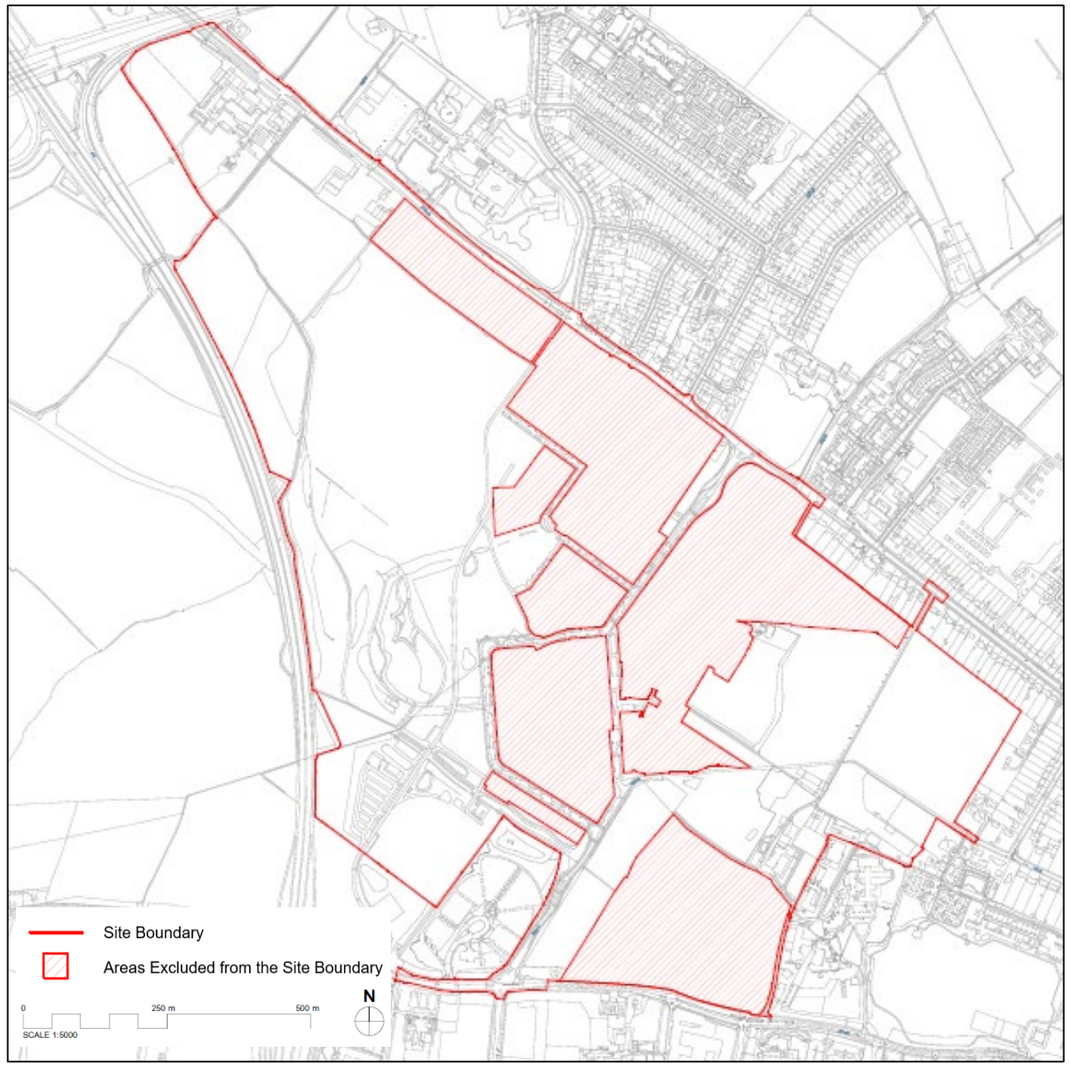
1.13 Further detail on the planning context and history is provided in **ES Volume 1, Chapter 2: EIA Methodology**.

Figure 1.1 Site Location[2]



[2] *Note, indicative site boundary shown for the purposes of illustrating site location. Excluded areas from the planning application redline boundary (as shown in Figure 1.2) are not included within this figure.*

Figure 1.2 Planning Application Redline Boundary



SITE INFORMATION

1.14 The site covers a total area of 114 ha and is located centrally at National Grid Reference TL 421 606. Cambridge City Centre is located approximately 2km to the south-east of the site at its nearest point. The site forms part of the emerging settlement of Eddington.

1.15 The site is bound by:

- A small portion of the A14 to the north, and Girton College, residential properties and agricultural fields which front onto Huntingdon Road (A1307) to the north and north-east;

- Residential properties located along Huntingdon Road (A1307), Ascension Parish Burial Ground, Trinity Hall (University of Cambridge student accommodation) and Trinity Hall sports grounds to the east of the site;
- Madingley Road Park and Ride, Madingley Road (A1303), and residential properties and buildings associated with the University of Cambridge to the south; and
- The M11 motorway to the west, beyond which lies agricultural fields.

1.16 The site is roughly triangular in shape and currently comprises majority grassland fields, construction sites, and also incorporates sections of Huntingdon Road (A1307) and Madingley Road (A1303). The majority of the site comprises of topsoil and clay that emerged as a result of Phase 1 development relating to the 2013 OPP on the site. The Barcroft Centre and associated buildings are located within the most northerly extent of the site, along Huntingdon Road (A1307).

1.17 In addition, the site contains areas of hard standing, including an area utilised for parking to the south of the site. The site comprises a variety of amenity and green space, including swales, ponds, grassland, areas of woodland, hedgerows and individual trees. A currently decommissioned storm water recycling system pond is located along the western portion of the site. The Washpit Brook is the closest watercourse to the site which runs through the site from south-east to the north-west. Traveller's Rest Pit Site of Special Scientific Interest ("SSSI") is located within the eastern extent of the site.

1.18 Vehicular access to the site can be gained via either Huntingdon Road (A1307) to the north or Madingley Road (A1303) to the south of the site. Huntingdon Road (A1307) and Madingley Road (A1303) are linked via Eddington Avenue, which traverses the south-eastern extent of the site. Pedestrian access can also be gained from Storey's Way, Madingley Rise, Horsechesnut Avenue and Bunkers Hill. A Public Rights of Way (Footpath 99/5) crosses the site in the north-west corner, running between Huntingdon Road (A1307) to Cambridge Road, and crossing beneath the M11.

1.19 Photographs of the existing site are shown in Figure 1.3.

1.20 Further detail on the existing baseline conditions and environmental context is presented within **ES Volume 1, Chapter 3: Alternatives and Design Evolution**, the technical assessments (**ES Volume 1, Chapters 6** to **15**) and their appendices (**ES Volume 3**), **ES Volume 2, Landscape and Visual Impact Assessment** and within the Non-Technical Summary (NTS).

THE LEGISLATIVE REQUIREMENTS FOR AN EIA

1.21 Planning applications for development/works that require an EIA, in accordance with the EIA Regulations, are termed 'EIA Applications'. Development that requires an EIA under the EIA Regulations is defined as 'EIA Development'.

1.22 The requirement for an EIA is based on the likelihood of significant environmental effects arising from a proposed development; it is either mandatory or conditional depending on the classification of the development project. EIA applications are divided into Schedule 1 and Schedule 2 applications under the EIA Regulations.

1.23 Schedule 1 developments constitute those that are likely to have significant effects on the environment, such as major chemical or petrochemical projects and construction of ground or air transport infrastructure, and for which EIA is mandatory. For all other developments which fall under the project descriptions in Schedule 2, the need for an EIA is determined based on set criteria as follows:

- It is within one of the classes of development stated in Schedule 2[3]; AND
- EITHER it exceeds the applicable threshold criteria for that class of development in Schedule 2; OR it is to be carried out in part or all of a 'sensitive area[4]'; AND
- It is likely to have significant effects on the environment by virtue of factors such as its nature, size or location.

1.24 The EIA Regulations Schedule 2 Part 10(b), states that for *"urban development projects, including the construction of shopping centres and car parks, sports stadiums, leisure centres and multiplex cinemas",* the thresholds which determine the need for a development to be screened for the potential for environmental effects comprise:

"(i) the development includes more than 1 hectare of urban development which is not dwelling / house development; OR

(ii) the development includes more than 150 dwellings; OR

(iii) the overall area of the development exceeds 5 hectares".

1.25 Based on the above, as the Proposed Development includes more than 1 hectare of urban development land which is not dwelling / house development, provides more than 150 dwellings and the overall site area exceeds 5 hectares, and that there is the potential for significant environmental effects given the size and scale of the Proposed Development, it is considered to constitute 'EIA Development' under the EIA Regulations. As such, the Applicant has undertaken an EIA and the results of which are presented in this **ES** (**Volumes 1, 2** and **3**) which have been submitted as part of the planning application.

LOCATION OF INFORMATION WITHIN THE ES

1.26 Regulation 18(3) of the EIA Regulations, requires that an ES includes the information set out in Schedule 4 that is reasonably required to assess the environmental effects of the development and which the Applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile.

1.27 Regulation 18(3) of the EIA Regulations defines that an 'an environmental statement is a statement which includes at least:

- *'a description of the proposed development comprising information on the site, design, size and other relevant features of the development;*
- *a description of the likely significant effects of the proposed development on the environment;*
- *a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*
- *a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;*
- *a non-technical summary of the information referred to in sub-paragraphs (a) to (d); and*
- *any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected'.*

1.28 The above information defined in Regulation 18(3), as set out within Schedule 4 of the EIA Regulations (information for inclusion in environmental statements), is considered what is reasonably required to assess the environmental effects of the Proposed Development and which the Applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile. The information required under Paragraph 1 of Schedule 4 of the EIA Regulations and its location within this ES is presented in **ES Volume 3, Appendix: Introduction – Annex 1.**

[3] *These include, but are not limited to; agriculture and aquaculture; energy industry; mineral industry; chemical industry; infrastructure projects; tourism and leisure.*

[4] *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (amended in 2018 and 2020), 2(1) "sensitive area".*

Figure 1.3 Existing Site Conditions[5]















COMPETENT EXPERTS AND RELEVANT EXPERTISE

1.29 Regulation 18(5) of the EIA Regulations require that to ensure the completeness and quality of the ES: '(a) the developer must ensure that the environmental statement is prepared by competent experts' and '(b) the environmental statement must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts' to ensure the completeness and quality of the ES.

1.30 This EIA has been carried out by Trium Environmental Consulting LLP ('Trium') and several technical specialists. Trium's EIA coordination team and the supporting technical specialists (along with a statement on their expertise) are presented within **ES Volume 3, Appendix: Introduction – Annex 2**. Trium is a member of the Institute of Environmental Management and Assessment (IEMA) EIA Quality Mark Standard and is committed to excellence in the following areas: EIA Management, EIA Team Capabilities, EIA Regulatory Compliance, EIA Context and Influence, EIA Content, EIA Presentation and Improving EIA practice.

1.31 In addition, the following statement is provided:

"Trium is an environmental consultancy specialising in property development projects in the UK. Trium's Partners and Employees have extensive experience in managing the environmental issues and impacts surrounding large scale, high profile development projects. The Partners and Employees of Trium have, over the course of their careers to date (including with former employers), project directed, managed or contributed to over 600 EIAs within the residential, retail, student accommodation, leisure, commercial, cultural, infrastructure and industrial sectors. Trium's lead EIA Practitioner for this project has over 20 years EIA experience of managing and leading EIA projects."

[5] *Note: site boundary shown is indicative and is for informative purposes only, excluded areas from the planning application redline boundary of the site (as shown in Figure 1.2) are not included to allow numbering within this figure to be easily visible.*

ENVIRONMENTAL STATEMENT STRUCTURE

1.32 This volume (**ES Volume 1**) is the main body of the ES and is divided into several background and technical chapters supported with figures and tabular information for clarity of reading. A complete set of appendices are provided for reference and are contained within **ES Volume 3** - these comprise background data, tables, figures and surveys. A Glossary of Terms and Abbreviations is provided in **ES Volume 3, Appendix: Introduction – Annex 3**.

Environmental Statement

1.33 The ES comprises of three volumes:

- **ES Volume 1: Main ES** – a document which forms the main body of the ES and which comprises of the following non-technical and technical chapters:
  - Chapter 1: Introduction;
  - Chapter 2: EIA Methodology;
  - Chapter 3: Alternatives and Design Evolution;
  - Chapter 4: The Proposed Development;
  - Chapter 5: Enabling, Demolition and Construction;
  - Chapter 6: Socio-Economics;
  - Chapter 7: Traffic and Movement;
  - Chapter 8: Air Quality;
  - Chapter 9: Noise and Vibration;
  - Chapter 10: Built Heritage;
  - Chapter 11: Ecology and Biodiversity
  - Chapter 12: Land Take and Soils (Agriculture);
  - Chapter 13: Ground Conditions and Land Contamination;
  - Chapter 14: Water Resource, Flood Risk and Drainage;
  - Chapter 15: Climate Change;
  - Chapter 16: Effect Interactions;
  - Chapter 17: Likely Significant Effects; and
  - Chapter 18: Environmental Management, Mitigation and Monitoring Schedule.
- **ES Volume 2: Landscape and Visual Impact Assessment** – a separate landscape and visual impact assessment document that will be accompanied by a full set of views and verified images.
- **ES Volume 3: Technical Appendices** – comprises background data and information, including supporting technical reports, tables, figures and surveys. The following appendices are included:
  - Appendix: Introduction
    - Annex 1: Location of Information within the ES
    - Annex 2: Statement of Competence
    - Annex 3: Glossary of Terms and Abbreviations
  - Appendix: EIA Methodology
    - Annex 1: EIA Scoping Report
    - Annex 2: EIA Scoping Opinion
    - Annex 3: Cumulative Schemes List and Map
  - Appendix: Traffic and Movement
    - Annex 1: Baseline and Future Year Traffic Flows
    - Annex 2: Road Links
  - Appendix: Air Quality
    - Annex 1: Model Verification
    - Annex 2: Air Quality Legislation Policy
    - Annex 3: Dust Risk Assessment
  - Appendix: Noise and Vibration
    - Annex 1: Legislation, Planning Policy and Other Relevant Standard and Guidance
    - Annex 2: Glossary
    - Annex 3: Environmental Noise Survey Report
    - Annex 4: Construction Plant Assumptions
    - Annex 5: Enabling, Demolition and Construction Noise Prediction Images
  - Appendix: Built Heritage
    - Annex 1: Built Heritage Technical Appendix
  - Appendix: Ecology and Biodiversity
    - Annex 1: Letter from Guy Belcher, Cambridge City Council Biodiversity Officer, dated 19 September 2024, relating to Habitat Regulations Assessment Screening
    - Annex 2: Summary of the Results of a Data Search Using MAGIC.GOV.UK
    - Annex 3: Results of a Data Search with CPER;
    - Annex 4: Washpit Brook River Condition Assessment Baseline Report
    - Annex 5: GCN Survey Report;
    - Annex 6: Habitat, Plant and Invertebrate Survey Report
    - Annex 7: Invertebrate Survey Report
    - Annex 8: Additional Amphibian Surveys Report
    - Annex 9: Reptile Survey Report
    - Annex 10: Breeding Bird Survey Report
    - Annex 11: Winter Bird Survey Report
    - Annex 12: Bat Roost Survey Report
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    - Annex 15: Badger Survey Report
    - Annex 16: Harvest Mouse Survey Report
  - Appendix: Land Take and Soils (Agriculture)
    - Annex 1: Agricultural Land Classification and Soil Resources
  - Appendix: Ground Condition and Land Contamination
    - Annex 1: Land Contamination Preliminary Risk Assessment (PRA)
  - Appendix: Water Resources, Flood Risk and Drainage
    - Annex 1: Legislation, Planning Policy and Other Relevant Standard and Guidance
    - Annex 2: Foul Drainage Sketches
    - Annex 3: Anglian Water Correspondences
    - Annex 4: Flood Risk Assessment and Surface Water Drainage Strategy
    - Annex 5: Cambridge Water Correspondence
  - Appendix: Climate Change and Greenhouse Gases
    - Annex 1: Climate Change Risk Assessment (CCRA)

Non-Technical Summary

1.34 A Non-Technical Summary ('NTS') document has been prepared to provide a concise summary of the ES written in non-technical language. The NTS presents a summary of the Proposed Development, the alternatives considered by the Applicant, the likely effects and the identified residual likely significant environmental and socio-economic effects, and any required mitigation measures.

ES AVAILABILITY AND COMMENTS

1.35 The ES is available for viewing on the GCSPS's Planning Portal:

https://www.greatercambridgeplanning.org/planning-applications/view-and-comment-on-planning-applications/

1.36 Comments on the Planning Application can be provided online via the GCSPS's Planning Portal.

1.37 Electronic copies of the ES and NTS are available free of charge. Printed copies of the ES and NTS would incur a printing and postage charge. For further details please contact hello@triumenv.co.uk with reference in the email header to "*Environmental Statement Request – North West Cambridge Masterplan*" or Tel: 0203 887 7118.

Chapter 2: EIA Methodology

TRIUM

INTRODUCTION

2.1 This chapter sets out the overall approach to and methodology for undertaking the EIA and preparation of the Environmental Statement (ES). It details the process for identifying the environmental topics to be included in the EIA and the method of assessing the likely significant effects that have the potential to arise as a result of the Proposed Development, including during the enabling, demolition and construction works and on completion and occupation of the Proposed Development.

2.2 The methodology is in accordance with applicable legislation, guidance, and case law and has been tailored to each topic of the EIA using industry standard methods and criteria and professional opinion where appropriate. Further detail on how the assessment methodology is applied to each topic is presented within the respective technical chapters of this ES (**ES Volume 1, Chapters 6 to 15** and **ES Volume 2**).

2.3 This ES chapter is supported by several appendices that are provided within **ES Volume 3**; these are referenced as relevant throughout this chapter and the remainder of **ES Volume 1**.

OVERVIEW OF THE OUTLINE PLANNING APPLICATION

Format of the Planning Application

2.4 As set out in **ES Volume 1, Chapter 1: Introduction**, the Applicant is seeking permission for an outline planning application (OPA) for the Proposed Development. The OPA will seek approval of outline design parameters; 'matters' relating to scale, layout, appearance, secondary and tertiary access and landscaping shall be reserved for approval at a later date through the submission of Reserved Matters Applications (RMAs) to the Greater Cambridge Shared Planning Service (GCSPS).

2.5 The Town and Country (Development Management Procedure) (England) Order 2015[1] ('DMPO') sets out requirements and guidance for outline planning applications. In accordance with the DMPO, the following matters are reserved for later approval:

- **Amount of Development** – the specifics in terms of the exact amount of floorspace for each land use sought for approval is not provided at this stage. Instead, a defined maximum land use quantum proposed for each use and building development zones identifying the location of each Use Class are provided. The Development Specification and the Land Use Parameter Plan (Drawing No. PP4-10004) set out the Land Use Quantum and Land Use Distribution across the site;
- **Layout** – as defined in the DMPO "t*he way in which buildings, routes and open spaces within the development are provided, situated and orientated in relation to each other*" is reserved. Although reserved, the OPA seeks outline approval of parameters associated with the layout of the land uses and associated key open spaces and routes as set out in the Parameter Plans. The layout of land uses proposed are defined by development zones based on their Use Class, open space provision or land allocated for transport infrastructure throughout the site. Land uses will be required to come forward within zones of development in accordance with their Use Class or intended use and the Land Use Parameter Plan (Drawing No. PP4-10004);
- **Scale** – as defined in the DMPO "*the height, width and length of each building in relation to their surroundings*" is reserved. However, in compliance with the DMPO, the OPA seeks approval for the maximum scale of the Proposed Development as shown on the Proposed Maximum Heights Parameter Plan (Drawing No. PP6-10006). For height parameters, this is defined in terms of metres Above Ordnance Datum (m AOD) and maximum number storeys. A maximum developable area is provided. The Design Code sets further rules to control the relationship between different buildings (e.g. breaks between buildings that come forward within the development zones);
- **Appearance** – as defined in the DMPO "*the aspects of a building or place within the development which determine the visual impression the building or place makes, including the external built form of the development, its architecture, materials, decoration, lighting, colour and texture*" is reserved. However, the OPA seeks approval for a Design Code, which establishes principles and / or a framework in relation to the appearance of the Proposed Development, which will guide the detailed design ahead of submission for approval at the RMA stage;
- **Landscaping** – as defined in the DMPO "*the treatment of land (other than buildings) for the purpose of enhancing or protecting the amenities of the site and the area in which it is situated and includes— (a) screening by fences, walls or other means; (b) the planting of trees, hedges, shrubs or grass; (c) the formation of banks, terraces or other earthworks; (d) the laying out or provision of gardens, courts, squares, water features, sculpture or public art; and (e) the provision of other amenity features*" is reserved. The location of landscaping and open space is defined within the Green Infrastructure, Play and Open Space Parameter Plan (Drawing No. PP2-10002). In addition, the Design Code being submitted for approval will define the principles and strategies to form future landscape design at the detailed design stage; and
- **Means of Access (Secondary and Tertiary)** – the detail of "*means for the accessibility to and within the site, for vehicles, cycles and pedestrians in terms of the positioning and treatment of access and circulation routes and how these fit into the surrounding access network*" (as defined in the DMPO) is reserved for Secondary and Tertiary Access. The Proposed Development primary access point will be submitted in detail. Flexibility is sought for the internal routes within the site (which will be subject to the final layout of the scheme, to be confirmed at the RMA stage). The proposed routes are provided within Access and Movement Parameter Plan (Drawing No. PP3-10003).

2.6 An illustrative masterplan ('Illustrative Masterplan') has also been prepared to accompany the OPA as provided within the Design and Access Statement (DAS). The Illustrative Masterplan includes an iteration of the Proposed Development that could come forward within the parameters sought for approval by the OPA. The Illustrative Masterplan provides an understanding of a more proportionate and realistic impact of the Proposed Development on the environment, in comparison to the reasonable worst case scenarios tested for the OPA in the EIA. The Illustrative Masterplan itself is not sought for approval and will not form part of the grant of planning permission for the proposal.

2.7 Further details of the Proposed Development sought for approval and assessed within this ES are presented within **ES Volume 1, Chapter 4: The Proposed Development**.

Basis of Assessment

Outline Control Documents

2.8 The OPA includes three Control Documents which define the parameters of the Proposed Development for which planning permission is sought. These Control Documents are – (1) the Parameter Plans (2) the Development Specification; (3) the mandatory components of the Design Codes.

2.9 These are the documents and plans that describe the principal components of the Proposed Development, provide parameters that guide future RMAs, and act as controls to limit development within the parameters set.

2.10 The assessments contained within each of the technical chapters (**ES Volume 1, Chapters 6 to 15** and **ES Volume 2**) are based on the Proposed Development sought for approval as shown within the Control Documents, as well as the detailed access plans relating to the primary means of access to the site.

2.11 The Control Documents that comprise the Proposed Development, and for which outline planning permission is sought, include:

- **Parameter Plans** – present outline parameters associated with the building heights, land uses, open space and access for the Proposed Development, comprising:
  - Demolition Plan (PP1-10001);
  - Green Infrastructure, Play and Open Space Parameter Plan (PP3-10003);
  - Access and Movement Parameter Plan (PP3-10003);

[1] *Town and Country Planning, England (2015). Available at: http://www.legislation.gov.uk/uksi/2015/595/pdfs/uksi_20150595_en.pdf*

- Land Use Parameter Plan (PP4-10004);
- Existing Levels Parameter Plan (PP5-10005);
- Proposed Maximum Heights Parameter Plan (PP6-10006); and
- Urban Design Parameter Plan (PP7-10007).

- **Development Specification** – a document which defines and describes the principal components of the Proposed Development, including the form and content of the OPA as well as the parameters for future RMAs. The Development Specification outlines the maximum amount of development that could come forward across the site and land use quantum.
- **Design Code** – provides a design framework to secure the vision, character and quality of the detailed design which will be sought for approval at the RMA stage. The Design Code defines a set of 'rules' that need to be applied to the detailed design of the Proposed Development. The Design Code further refines the Parameter Plans and defines the final form of the Proposed Development and has been informed by the findings of the environmental assessment work. The mitigation measures identified within the technical assessments of this ES, where they relate to design elements, have been incorporated into the Design Code. Further details are provided in **ES Volume 1, Chapter 3: Alternatives and Design Evolution** and **ES Volume 1, Chapter 4: The Proposed Development** as well as the technical chapters of this ES (**ES Volume 1, Chapters 6 to 15**).

2.12 The Parameter Plans, Development Specification and Design Code submitted as part of the OPA set out the information required to allow the environmental impacts and effects of the Proposed Development (against baseline conditions) to be identified with sufficient certainty for the OPA. In accordance with the Planning Inspectorate's Advice Note Nine: Rochdale Envelope[2] the EIA needs to establish a "robust worst case scenario"[3]. Accordingly, the technical assessments contained within each of the technical ES chapters (**ES Volume 1, Chapters 6 to 15**) are based on the maximum development sought for approval within the Control Documents as a worst case, supplemented by additional information required to inform complete and robust technical assessments which is not defined by the outline parameters (e.g. plant specification and positioning, construction programme), but represents a reasonable worst-case assessment for each technical topic based on what could feasibly be built out under the outline planning permission. This supplementary information has been prepared by the Project Team along with the Applicant (and is included in the detail provided in **ES Volume 1, Chapter 4: Proposed Development** and **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**) based on prior expertise and knowledge with comparative developments, and is therefore considered reliable and robust for the purposes of the EIA.

2.13 Detailed planning permission is sought for the primary means of access to the site, which will form three new site access points located on Huntingdon Road (A1307), as follows:

- North-West Huntingdon Road Access – located in the north-west of the site, a new signalised junction on Huntingdon Road joining the proposed Cartwright Avenue;
- New vehicular access located to the north-west of the site from Huntingdon Road into Plot A of the Illustrative Masterplan; and
- New vehicular access located to the north-west of the site from Huntingdon Road into Plot B2 of the Illustrative Masterplan.

2.14 The extent of the access sought for approval is shown in the detailed access plan, as shown in **ES Volume 1, Chapter 4: The Proposed Development**.

Assessment Scenarios

2.15 The construction of the Proposed Development is to be phased. It is likely that the site will come forward in three main phases (Phases 2, 3 and 4, with Phase 1 already being completed under a previous planning consent – see paragraphs 2.60 – 2.62 for further details), which will be considered where relevant within each technical ES chapter. The following assessment scenarios are considered within the technical ES chapters, where relevant:

- **Baseline Conditions (2025)**: reflecting the existing baseline conditions on the site and within the surrounding area. For some technical topics it is necessary to apply a 'future' baseline;
- **Peak Construction (2033)**: an assessment of the potential demolition and construction effects during the peak construction works associated with the Proposed Development against the baseline condition;
- **Interim Scenario**: where appropriate, an assessment of the complete occupation of Phase 2 and partial occupation and construction of Phases 3 and 4 the Proposed Development, alongside on-going construction works. Where this assessment will be undertaken, this is set out clearly within each individual technical ES chapter;
- **Fully Complete and Operational (2037)**: an assessment of potential effects when the entire Proposed Development is completed and operational/in use against either the existing or future baseline conditions, where appropriate; and
- **Cumulative**: an assessment of effects as a result of the Proposed Development with other surrounding development schemes, both during peak construction and once the Proposed Development is fully complete and operational, referred to as 'cumulative schemes' (as relevant). Further detail is provided in the '*Cumulative Effects and Effect Interactions*' section of this ES chapter. Refer to **ES Volume 3, Appendix: EIA Methodology – Annex 3** for a full list of cumulative schemes.

2.16 Consideration of the decommissioning of the Proposed Development is not a requirement of the EIA Regulations relevant to this project, and therefore has not been assessed in the EIA or discussed any further in this ES.

2.17 As flexibility is being sought by the Applicant within the OPA, particularly in relation to the amount of floor area which could come forward for each land use class as well as the specific location of buildings, the EIA has determined appropriate assessment scenarios that have been applied to each of the technical aspects, on a topic-by-topic basis, to ensure that a reasonable and likely worst-case assessment is being undertaken and the likely significant environmental effects are identified and addressed. The different testing scenarios are discussed in detail within each technical chapter of the ES (**ES Volume 1, Chapters 6 to 15** and **ES Volume 2**) and are summarised in Table 2.1 and the proceeding text.

Table 2.1 Key Technical Assessment Scenarios

Topic	Enabling, Demolition and Construction	Interim Scenario	Complete and Operational			
			Maximum Development Parameters (inc. Housing Quantum)	Minimum Employment Generating Scenario	Maximum Traffic Generating Scenario	Illustrative Masterplan
Socio-Economics	X		X	X		
Traffic and Movement	X	X			X	
Air Quality	X	X	X (for Site Suitability)		X	

[2] *HMSO (2018), Nationally Significant Infrastructure Projects - Advice Note Nine: Rochdale Envelope, Republished July 2018 (version 3)*

[3] *The PINS advice note on the Rochdale Envelope was issued in the context of Nationally Significant Infrastructure Projects (NSIPs) and does not directly apply to the Proposed Development. However, it is a useful starting point for large non-NSIP development and therefore appropriate to take it into account in this instance.*

Topic	Enabling, Demolition and Construction	Interim Scenario	Complete and Operational			
			Maximum Development Parameters (inc. Housing Quantum)	Minimum Employment Generating Scenario	Maximum Traffic Generating Scenario	Illustrative Masterplan
Noise and Vibration	X	X	X (for Site Suitability)		X	X
Built Heritage	X		X			X
Ecology and Biodiversity	X		X			X
Agriculture and Soils (Land Take)	X					
Ground Conditions and Land Contamination	X	X	X			
Water Resources, Flood Risk and Drainage	X	X	X			
Climate Change	X		X		X	
Landscape and Visual Impact Assessment	X		X			X

Enabling, Demolition and Construction Works

2.18 **ES Volume 1, Chapter 5: Enabling, Demolition and Construction** provides an outline of the anticipated enabling, demolition and construction programme, as well as related activities and aspects (i.e. excavation volumes and construction material quantities, HGV movements and HGV routing). Enabling, demolition and construction assumptions were developed based on the maximum parameters, as detailed in the Parameter Plans, in combination with professional judgment. The use of the maximum parameters for this purpose was considered appropriate and allows for a reasonable assessment of these works, as the information is based on a maximum amount of development that could be brought forward on the site and the location of various land uses proposed. It also reflects a reasonable worst-case assessment for the EIA alongside which the detailed design of the Proposed Development via future Reserved Matters Applications (RMAs) can be brought forward. Certain elements of enabling, demolition and construction information such as: details on construction methodology; hours of work; access routes; likely construction activities; and likely equipment used, is unlikely to materially change as a result of the final scheme which would be built-out under the associated RMAs. Should this not be the case, further assessment would be undertaken as part future RMAs.

Interim Scenario

2.19 An indicative Phasing Plan (**ES Volume 1, Chapter 5: Enabling, Demolition and Construction**) has been submitted to accompany the OPA. Whilst the plan is not sought for approval and as such does not form a Control Document, the phasing plan, and resultant outline construction programme and development trajectory, has been developed to inform the basis of assessment as part of the EIA where interim year assessments have been considered. The Proposed Development is anticipated to be delivered in three phases: Phase 2, Phase 3 and Phase 4. This has allowed for the assessment of potential significant effects throughout the duration of the construction programme and phased delivery of the Proposed Development. It provides a scenario which takes into consideration the phased delivery of land use parcels, new access and future residents that are expected to occupy the site prior to the Proposed Development's full build out by 2037. Further details on the phased delivery of the Proposed Development is provided in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**

2.20 Where relevant (notably in **ES Volume 1, Chapter 7: Traffic and Movement**, **ES Volume 1, Chapter 8: Air Quality** and **ES Volume 1, Chapter 9: Noise and Vibration**), an interim scenario has been considered which comprises an assessment of when construction is underway on the later phases and the initial phases of the Proposed Development are complete and occupied, the assessment therefore takes account of the overlap of construction and operational development. Further details in regard to the assessment methodology of the enabling and construction assessment is provided below in paragraphs 2.121 to 2.128.

Complete and Operational Development

Maximum Development Parameters

2.21 This scenario represents the maximum scale, height and layout parameters that the Proposed Development could be built out to. The maximum development parameters comprise the outer most, maximum dimensions for every development zone on the site in accordance with the Control Documents.

2.22 The heights and land use parameters reflect the maximum built form of development being sought for approval, allowing for flexibility of where buildings could come forward within the defined 'developable area' subject to the height limits shown on the Parameter Plans. The massing related technical studies (landscape and visual and built heritage) provide an assessment of the likely environmental effects of the maximum scale of development sought for approval, as this represents the reasonable worst-case scenario.

2.23 This scenario also includes the maximum population generating scheme which is informed by the Land Use Parameter Plan (Drawing No. PP4-10004). For some technical assessments (e.g. the socio-economics assessment) other non-residential uses and associated floorspace is included in accordance with the maximum floorspace permissible of non residential uses for the total development area as set out in the Development Specification. Where necessary, an illustrative mix of housing has also been applied to generate the reasonable worst-case scenario as set out in **ES Volume 1, Chapter 4: The Proposed Development**.

2.24 This scenario brings forward the largest population and in particular child yield which is important for assessing social infrastructure and playspace requirements, and brings forward the most residential floor space and considers all locations where residential uses could come forward which is important for site suitability noise and air quality assessments. This scenario is applied as relevant in **ES Volume 1, Chapter 6: Socio Economics**, **ES Volume 1, Chapter 8: Air Quality** and **ES Volume 1, Chapter 9: Noise and Vibration**.

Minimum Employment Generating Scenario

2.25 The socio-economic assessment (**ES Volume 1, Chapter 6: Socio-Economics**) tests the employment provision possible under the OPA. A minimum floorspace quantum has been derived from a reasonable assumptions from the Illustrative Masterplan. This represents the minimum non-residential floorspace that would realistically come forward within the parameters of the Proposed Development. Although it is unlikely that this scenario will come forward, this will assess the reasonable worst-case scenario for the socio-economics assessment, in relation to employment generation.

Maximum Traffic Generating Scenario

2.26 In terms of traffic and movement (and the road traffic noise and air quality road traffic emissions assessments), the EIA assesses the maximum amount of development across the entire Proposed Development and mix of uses sought for approval as a reasonable worst-case scenario. In terms of traffic and movement related effects, the upper limits on the amount of development sought for approval represents the worst case, as a greater amount of floorspace or number of residential homes for example leads to a higher trip generation.

2.27 When assessing the effects of the operation of the Proposed Development, the projected environmental conditions in the future (i.e. 'future baseline') is used, at the projected year of opening of the Proposed Development which takes into consideration future growth in relation to road traffic. Where using a future baseline is more appropriate, this is detailed in the methodology of the relevant technical ES chapter.

2.28 The Proposed Development operation traffic data has been assessed using forecast traffic flows based on the maximum development quantum. Trip generation and mode share assumptions are consistent with those set out in the Transport Assessment, submitted with the OPA, which draws on observed data from Phase 1 of the 2013 OPP and nearby sites such as West Cambridge

Illustrative Masterplan

2.29 An Illustrative Masterplan has also been developed and accompanies the OPA, which demonstrates one way in which the Proposed Development could be brought forward within the outline parameters sought for approval.

2.30 An assessment of the Illustrative Masterplan is not required with respect to the EIA as it shows only one way in which the Proposed Development could come forward, rather than the permission that is being sought (i.e. the scheme parameters). However, for some technical assessments (such as **ES Volume 1, Chapter 10: Built Heritage**, **ES Volume 1, Chapter 11: Ecology and Biodiversity** and **ES Volume 2**) it is appropriate to also consider the Illustrative Masterplan where further detail is required to complete robust assessments (as explained in paragraph 2.6) and, in some instances, this has been completed to support the assessment of a reasonable worst-case within the parameters set:

Flexible Use Class E / Sui Generis

2.31 The Proposed Development will provide up to 40,000m^2 Gross External Area (GEA) of Use Class E(g) / Sui Generis Research Uses and up to 3,500m^2 (GEA) Use Class E(a-f).

2.32 Detail on the reasonable worst-case scenarios assessed in relation to these uses is set out in the *'Impact Assessment Methodology'* sections of the respective technical chapters of **ES Volume 1, Chapters 6 to 15** and **ES Volume 2**, where relevant.

EIA GUIDANCE AND PLANNING POLICY

EIA Guidance

2.33 The ES has been prepared in accordance with applicable legislation, guidance, and case law for the preparation of such documents. Specifically, this ES has been undertaken in accordance with the Institute of Environmental Management and Assessment ('IEMA') Quality Mark indicator checklist and with due consideration to the following:

- At a European level, reference has been made to the European Commission's (EC) various EIA guidance documents available here: https://environment.ec.europa.eu/law-and-governance/environmental-assessments/environmental-impact-assessment_en;
- At a domestic level, reference has been made to the Ministry of Housing, Communities and Local Government (MHCLG) overarching EIA Planning Practice Guidance (PPG)[4];
- In addition, the Highways England 'Design Manual for Roads and Bridges Sustainability and Environment – LA104 Environmental Assessment and Monitoring[5]' has been referred to as applicable;
- In relation to publications from professional bodies, reference has been made to the Institute of Environmental Management and Assessment (IEMA) publications as these include best practice / suggested improvements to the EIA process. This includes:
  - IEMA ES Review Criteria (COM3-6)[6];
  - IEMA 'Guidelines for Environmental Impact Assessment' (2004)[7];
  - IEMA 'Special Report into the State Environmental Impact Assessment Practice in the UK' (2011)[8];
  - IEMA 'Delivering Proportionate EIA' (2017)[9];
  - IEMA 'Materials and Waste in EIA' (2020)[10];
  - IEMA 'Climate Change Resilience and Adaption' (2020)[11];
  - IEMA 'Major Accidents and Disasters in EIA: A Primer' (2020)[12];
  - IEMA 'Principles of Cultural Heritage Impact Assessment in the UK' (2021)[13];
  - IEMA 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' (2022)[14];
  - IEMA 'A New Perspective on Land and Soil in Environmental Impact Assessment' (2022)[15];
  - IEMA 'Determining Significance for Human Health in Environmental Impact Assessment' (2022)[16];
  - IEMA 'Effective Scoping of Human Health in Environmental Impact Assessment' (2022)[17];
  - IEMA 'Effecting Non-Technical Summaries for Environmental Impact Assessment' (2023)[18];
  - IEMA 'Environmental Assessment of Traffic and Movement' (2023)[19]; and
  - IEMA 'Implementing the Mitigation Hierarchy from Concept to Construction' (2024)[20].
- Applicable EIA case law; and
- Topic specific guidance and assessment criteria, where appropriate.

[4] *Gov.UK, Guidance Environmental Impact Assessment, https://www.gov.uk/guidance/environmental-impact-assessment*
[5] *Highways England, 2020. Design Manual for Roads and Bridges 'Sustainability and Environment' – LA104 Environmental Assessment and Monitoring.*
[6] *Institute of Environmental Management and Assessment, undated; EIA Quality Mark – ES Review Criteria COM 3-6.*
[7] *Institute of Environmental Management and Assessment, 2004, Guidelines for Environmental Impact Assessment.*
[8] *Institute of Environmental Management and Assessment, 2011. The State of Environmental Impact Assessment Practice in the UK.*
[9] *Institute of Environmental Management and Assessment, 2017; Delivering Proportionate EIA.*
[10] *Institute of Environmental Management and Assessment, 2020, Materials and Waste in EIA.*
[11] *Institute of Environmental Management and Assessment, 2020, Climate Change, Resilience and Adaptation*
[12] *Institute of Environmental Management and Assessment, 2020, Major Accidents and Disasters Guidelines*
[13] *Institute of Environmental Management and Assessment, 2021, 'Principles of Cultural Heritage Impact Assessment in the UK'.*
[14] *Institute of Environmental Management and Assessment, 2022. Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance, 2nd Edition*
[15] *Institute of Environmental Management and Assessment, 2022. Guide to: A New Perspective on Land and Soil in Environmental Impact Assessment.*
[16] *Institute of Environmental Management and Assessment, 2022; Determining Significance for Human Health in Environmental Impact Assessment.*
[17] *Institute of Environmental Management and Assessment, 2022; Effective Scoping of Human Health in Environmental Impact Assessment.*
[18] *Institute of Environmental Management and Assessment, 2023; Effective Non-Technical Summaries for Environmental Impact Assessment*
[19] *Institute of Environmental Management and Assessment, 2023; Environmental Assessment of Traffic and Movement*
[20] *Institute of Environmental Management and Assessment, 2024; Implementing the Mitigation Hierarchy from Concept to Construction. These guidelines supersede both IEMA 'Shaping Quality Development' (2015) and IEMA 'Delivering Quality Development' (2016).*

2.34 Whilst primarily written for major infrastructure projects, reference is also made to guidance/ advice notes published by the National Infrastructure Planning[9] where appropriate, as these can include relevant/ helpful information.

Planning Policy

2.35 The EIA has considered relevant national, regional and local planning policy and guidance as summarised below.

National Planning Policy and Guidance

2.36 The EIA has been undertaken having regard to the National Planning Policy Framework[21] ('NPPF'). The NPPF sets out the Government's economic, environmental and social planning policies for England. The policies contained within the NPPF articulate the Government's vision of sustainable development, which are intended to be interpreted at a local level, to meet the requirements of local aspirations.

2.37 As relevant to the EIA, specifically to the scope, methodology and assessment of effects for the EIA technical topics, the NPPF has been considered throughout the EIA and preparation of the ES. The NPPF was last updated in February 2025.

2.38 The EIA has also referred to the Planning Practice Guidance[22] (PPG), which is an online resource. The PPG aims to make planning guidance more accessible, and to ensure that the guidance is kept up to date.

Local Planning Policy and Guidance

2.39 As relevant to the EIA technical topic scope, methodology or assessment of effects, the ES has had regard to the following key local planning policy and guidance documents.

Cambridge Local Plan (2018)

2.40 The Cambridge Local Plan[23] was prepared by the Cambridge City Council (CCC) and forms part of the development plan for Cambridge. It sets out the vision, policies and proposals for the future development and land use in Cambridge to 2031. The development plan for Cambridge comprises the following:

- Cambridge Local Plan (2018);
- Adopted Policies Map (2018);
- Cambridgeshire Minerals and Waste Local Development Framework (2011, 2012); • Cambridge East Area Action Plan (2008); and
- North-West Cambridge Area Action Plan (2009).

2.41 The site is designated as a Major Development site within the Cambridge Local Plan.

South Cambridgeshire Local Plan (2018)

2.42 The South Cambridgeshire Local Plan[24] was prepared by South Cambridgeshire District Council (SCDC). It was adopted in 2018 and sets out the planning policies and land allocations to guide the future development of the district up to 2031. The Local Plan includes policies on a wide range of topics such as housing, employment, services and facilities and the natural environment. The Adopted Development Plan for South Cambridgeshire comprises the following:

- South Cambridgeshire Local Plan (2018)
- Cambridgeshire and Peterborough Minerals and Waste Local Plan (2021);
- Northstowe Area Action Plan (2007);
- Cambridge East Area Action Plan (2008);
- Cambridge Southern Fringe Area Action Plan (2008); and
- North West Cambridge Area Action Plan (2009).

2.43 The site is designated as a Major Development site within the South Cambridgeshire Local Plan.

North West Cambridge Area Action Plan (2009)

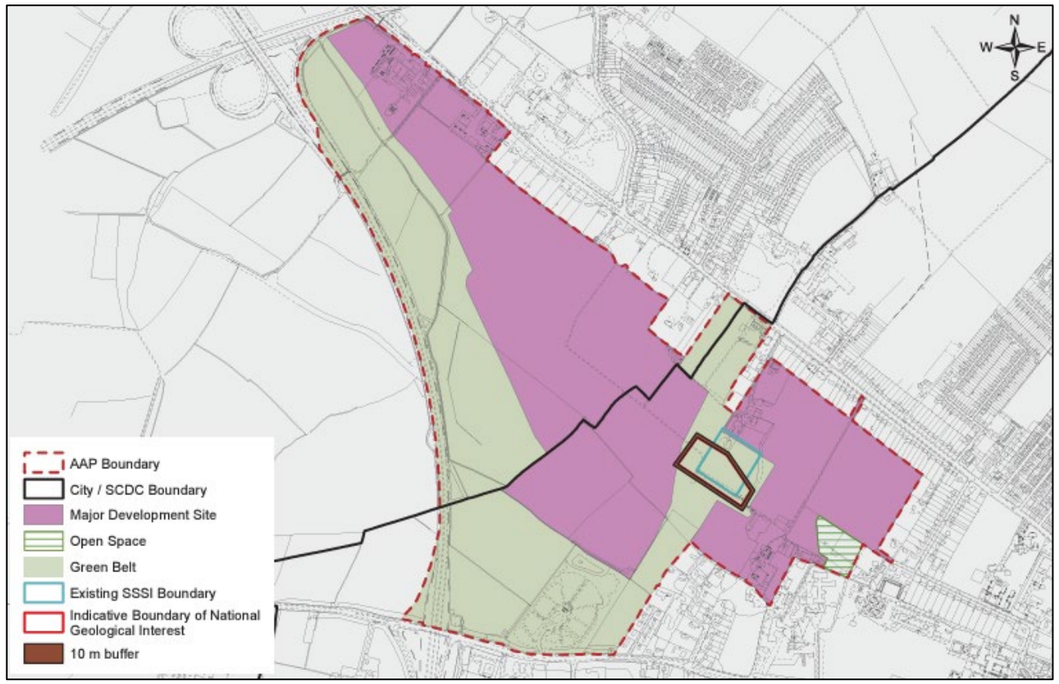
2.44 The North West Cambridge Area Action Plan (2009)[25] forms part of the development plan for CCC and SCDC, as described above. The North West Cambridge Area Action Plan relates to the allocated site area between Madingley Road (A1303) and Huntingdon Road (A1307), as shown in Figure 2.1, which was prepared jointly by CCC and SCDC.

2.45 The North West Cambridge Area Action Plan was adopted in 2009, and identifies the land to be released from the Cambridge Green Belt and sets out the planning policies to guide the development on the north-western edge of Cambridge. The site is currently allocated for the provision of the following uses:

- Accommodation for 2,000 students;
- 3,000 dwellings;
- Academic facilities;
- Sui-generis research institutes;
- Commercial research and development space;
- Hotel and conference facilities;
- Community facilities such as a primary school and shops;
- Public open recreational space; and
- Nature conservation areas.

[21] *Ministry of Housing, Communities and Local Government (MHCLG), 2025; 'National Planning Policy Framework.'*
[22] *Website - https://www.gov.uk/government/collections/planning-practice-guidance*
[23] *Cambridge City Council (CCC), 2018; Cambridge Local Plan 2018*
[24] *South Cambridgeshire District Council (SCDC), 2018; South Cambridgeshire Local Plan*
[25] *Cambridge City Council and South Cambridgeshire District Council (2009); North West Cambridge Area Action Plan, Local Development Framework*

Figure 2.1 North West Cambridge Area Action Plan Site Allocation



Emerging Planning Policy and Guidance

Greater Cambridge Local Plan

2.46 CCC and SCDC are in the process of drafting a joint Local Plan (Greater Cambridge Local Plan[26]) for the two areas, which will set out the vision and policies for planning building across both areas up to 2041. This will supersede both the Cambridge Local Plan (2018) and South Cambridgeshire Local Plan (2018).

2.47 The First Proposals of the Greater Cambridge Local Plan (Regulation 18 Version) was published in 2021, with consultation running from November to December 2021.

2.48 The site forms a proposed allocated site within the First Proposals (Policy S/NWC), which reviews and updates the site allocation as defined by the North West Cambridge Area Action Plan. A further Draft Plan Consultation is planned for Autumn/Winter 2025 with a Proposed Submission Plan Consultation (Regulation 19) scheduled for Summer / Autumn 2026, and submission to the Secretary of State (SoS) for examination by the end of 2026. The new Local Plan is therefore unlikely to be adopted by the time the OPA is determined

Other Guidance

2.49 Any additional planning policy and guidance documents considered relevant to the technical assessments which are covered by the EIA are also considered; these are identified in the relevant sections of this ES (**ES Volume 1, Chapters 6 to 15** and **ES Volume 2**).

2.50 In addition, where relevant to the assessment, the ES also presents a summary of any pertinent recognised industry guidance documents.

[26] *Greater Cambridge Shared Planning (2021); First Proposals. Greater Cambridge Local Plan (Regulation 18: Preferred Options 2021).*

PLANNING CONTEXT AND HISTORY

2.51 As described in **ES Volume 1, Chapter 1: Introduction**, the site forms part of the wider North West Cambridge Development Masterplan consented via the 2013 OPP.

Outline Planning Permission 2013

2.52 An outline planning application was submitted by University of Cambridge in 2011. Outline planning permission was granted on 22 February 2013 (Planning References: 11/1114/OUT / S/1886/11). The 2013 OPP granted permission for the following:

"Proposed development comprising up to 3,000 dwellings; Up to 2,000 student bedspaces; 100,000 sq.m. employment floorspace, of which: up to 40,000 sq.m. commercial floorspace (Class B1(b) and sui generis research uses) and at least 60,000 sq.m. academic floorspace (Class D1); up to 5,300 sq.m. gross retail floorspace (Use Classes A1 to A5) (of which the supermarket is 2,000 sq.m. net floorspace); Senior Living, up to 6,500sq.m. (Class C2); Community Centre; Indoor Sports Provision; Police; Primary Health Care; Primary School; Nurseries (Class D1); Hotel (130 rooms); Energy Centre; and associated infrastructure including roads (including adaptions to Madingley Rd and Huntingdon Rd), pedestrian, cycle and vehicle routes, parking, drainage, open spaces and earthworks."

2.53 This application was accompanied by an ES dated 2012 (herein referred to as the '2012 ES'). Further details of the 2012 ES are outlined in the section below.

2.54 The 2013 OPP was granted subject to a condition that all applications for approval of all the reserved matters shall be made to the Local Planning Authority before the expiration of 10 years in respect of any residential development, and 20 years for all other uses, from the 22 February 2013.

2.55 The 2013 OPP contains a Section 106 (S106) Legal Agreement, dated 22 February 2013. The S106 secured a number of deliverables, including the primary school, open space, sport pitches, play, allotments, public art, community and health facilities, alongside access agreements, management and maintenance responsibilities and contributions including biodiversity, Community Developer Worker and Sports Development Officer, air quality monitoring, waste, education, transport including CPZ, M11/J13 ramp metering works and improvements, enhancements, bus stops and bus subsidy and countryside access.

2.56 Since the 2013 OPP, a Section 73 (S73) application (also referred to as a minor material amendment) was granted in 2013 (Planning References: 13/1402/S73 / S/2036/13/VC) to increase the building heights in the local centre. There have also been numerous Reserved Matters Applications (RMAs), non-material amendments and discharging of conditions.

2.57 Reserved matters approvals have been obtained pursuant to the 2013 OPP for parts of the OPP site. Some of these plots have been built out while others are currently under construction pursuant to the 2013 OPP. These are collectively referred to as 'Phase 1', as discussed further in detail below.

The 2012 ES

2.58 The 2013 OPP was accompanied by the 2012 ES. It is noted the 2012 ES was prepared under a previous iteration of the EIA Regulations . The following environmental topics were scoped into the EIA (i.e., included for assessment) and considered within the 2012 ES.

- Socio-Economics;
- Landscape and Visual Assessment;
- Ecology and Nature Conservation;
- Soils and Geology;

- Archaeology;
- Cultural Heritage;
- Agriculture;
- Traffic and Transport;
- Noise Environment;
- Air Quality;
- Hydrology, Drainage and Flood Risk; and
- Utilities and Services.

2.59 No significant effects were identified for noise environment, air quality, hydrology, drainage and flood risk and utilities and services. Significant adverse effects were identified for landscape and visual (including light pollution), archaeology, cultural heritage and agriculture. Significant beneficial effects were identified for socio-economics, ecology and nature conservation, soils and geology and traffic and transport. Significant cumulative effects were identified for socio-economics (in relation to employment and open space provision), light pollution and agriculture.

Current Status of Phase 1

2.60 Phase 1 of the 2013 OPP has been implemented, with the following elements of Phase 1 complete and occupied / operational:

- 686 key worker homes;
- 325 student accommodation units;
- Primary school, nursery and community centre;
- Local retail and Sainsbury's supermarket;
- Sports pitches, open green space and landscaping;
- District heat network and energy centre;
- Estate public realm and transport infrastructure;
- Site wide non-potable water network, operated by Cambridge Water.

2.61 In addition, a total of 1,162 market housing units are to be delivered in plots released to third party developers as part of Phase 1, of which 435 units are currently complete and occupied (with the remaining units still under construction due to be completed in the next few years and most likely before construction works of the Proposed Development commence).

2.62 A separate RMA is to be submitted by the Applicant pursuant to the 2013 OPP in Q3 2025. The RMA will seek approval for the provision of 4.73ha of sports pitches / courts, 0.35ha of community allotments and 1.79ha of playspace within Amenity Cluster A and Amenity Cluster B of Phase 1 (as shown in Figure 2.2).

2.63 Table 2.2 summarises the current status of the respective Phase 1 plots of the 2013 OPP. Details on how Phase 1 plots have been considered within technical assessments is provided in paragraphs 2.84 to 2.86.

2.64 The Illustrative Masterplan as included within the 2013 OPP illustrating the Phase 1 plots is shown in Figure 2.2.

Figure 2.2 The OPP 2013 Illustrative Masterplan – Phase 1 Plots



Table 2.2 Status of Phase 1

Plot	Planning Reference	Approved	Description	Status	Proposed Construction Timeframes
Lot 1	13/1748/REM and 15/1553/S73	Approved February 2014	• 117 Key Worker Homes; • 2,000m² foodstore (Sainsbury's); • 700m² primary healthcare centre; • 200m² police office; and • Energy centre.	Complete	N/A
Lot 2	14/1722/REM	Approved January 2015	• 264 Key Worker Homes; • 1,963m² local shops; and • Flexible social space / ancillary office.	Complete	N/A
Lot 3	13/1827/REM	Approved March 2014	• 232 Key Worker Homes; • Flexible community space; and • Car parking courts.	Complete	N/A
Lot 4	22/01168/REM	Approved June 2022	• 88 market housing units.	Under construction.	Construction due to be complete Q2 2025.
Lot 5	13/1440/REM and S/2044/13/RM	Approved December 2013	• 325 student accommodation units.	Complete	N/A
Lot 6	14/0626/REM	Approved July 2014	• 3 Form Entry Primary School	Complete	N/A
Lot 7	13/1828/REM	Approved March 2014	• 716m² community centre; and • 994m² nursery (100 places).	Complete	N/A
Lot 8	14/0109/REM	Approved April 2014	• 73 Key Worker Homes.	Complete	N/A
M1	15/1663/REM S/2219/15/RM S/2766/19/R 20/01762/REM 20/01549/REM	Approved December 2015	• 249 market housing units.	Under construction.	Construction due to be complete Q3 2024.
M2				Complete	N/A
M3	17/0285/REM	Approved June 2017	• 106 market housing units; and • 416m² commercial floorspace (Use Class D1).	Under construction.	Construction due to be complete Q3 2025.
M4/M5	22/04989/REM	Approved April 2023	• 160 market housing units.	Under construction,	Construction due to be complete 2028.
S1/S2	21/04036/REM	Approved May 2023	• 373 market housing units.	Under construction,	Construction due to be complete Q4 2025.
S3	18/1195/REM	Approved April 2019	• 186 market housing units.	Complete	N/A
H	19/0156/FUL	Approved July 2019	• 150 room hotel; • 180 room aparthotel; • 641m² restaurant; and • 92m² café / retail.	Complete	N/A
Amenity Cluster A	N/A	To be submitted Q3 2025.	• 4.23ha of sports pitches / courts; • 0.2ha of community allotments; and • 1.79ha of playspace.	N/A	Construction due to be complete 2027.
Amenity Cluster B					

EIA SCOPING AND CONSULTATION

Consultation

2.65 Consultation is an ongoing process and has been fed back into the design of the Proposed Development. **ES Volume 1, Chapter 3: Alternatives and Design Evolution** of this ES provides a review of the consultation undertaken in respect of the alternatives considered by the Applicant and the design evolution of the Proposed Development, specifically in relation to environmental considerations. A summary of consultation undertaken with respect to the design of the Proposed Development is provided in **ES Volume 1, Chapter 3: Alternatives and Design Evolution.**

2.66 Consultation has also fed into and influenced the preparation of the EIA – both in regard to the scope and methodology of this ES as set out in the '*EIA Scoping*' section below. Where appropriate, separate topic-specific consultation has also been undertaken with relevant parties, and is summarised in the introductory sections of **ES Volume 1, Chapters 6 to 15**.

2.67 A Planning Statement and a Statement of Community Involvement have been submitted in support of the OPA which together summarise the wider consultation that has been undertaken with various consultees throughout the pre-application process.

EIA Scoping

2.68 Scoping forms one of the first stages of the EIA process and it is through EIA scoping that the Local Planning Authority ('LPA') (in this case GCSPS) and other key statutory and non-statutory consultees are consulted on those environmental topics that should be included in the scope of the EIA.

2.69 The process of EIA scoping and consultation is important to the development of a comprehensive and balanced ES. Views of consultees have helped to identify specific issues that require further investigation as part of the EIA process.

2.70 The main purpose of the EIA scoping process is to establish the approach to the EIA. This includes:

- Identification of the availability of existing baseline data and appropriate baseline surveys to be undertaken;
- Identification of sensitive receptors;
- Identification of potential environmental considerations and potential environmental effects;
- Identification of the topics to be included within the scope of the EIA and the methodology for assessment;
- Identification of any topics that can be scoped out of the EIA, with justification provided as to why likely significant residual environmental effects are not anticipated;
- Definition of the methodology for the assessment of the likely significant environmental effects; and
- Identification of other development schemes to be considered within a cumulative effects assessment.

2.71 An EIA Scoping Report (**ES Volume 3, Appendix: EIA Methodology – Annex 1**) was submitted in November 2024 to request an EIA Scoping Opinion from GCSPS and statutory consultees regarding the scope of the EIA. The EIA Scoping Report set out a high level description of the emerging Proposed Development at the time of writing and the potential key environmental impacts and likely significant effects to be considered as part of the EIA. The EIA Scoping Report includes the proposed approach that would be adopted for the EIA including the proposed scope of the ES (i.e. those topics to be 'scoped in' and 'scoped out') and assessment methodologies to predict the nature and scale of effects and to assess whether these effects are considered to be 'significant' in each case.

2.72 An EIA Scoping Opinion was received from GCSPS on 23 January 2025 (**ES Volume 3, Appendix: EIA Methodology – Annex 2**). The EIA Scoping Opinion agreed with the topics to be 'scoped in' and 'scoped out' of the ES and provided additional commentary around further details the council and statutory consultees would

like to see included within the ES and wider planning application. Topic specific points are addressed within the relevant technical ES chapters (**ES Volume 1, Chapters 6 to 15**).

2.73 Regulation 18(4) of the EIA Regulations requires the ES to be based on the most recent EIA Scoping Opinion. This ES is based on the EIA Scoping Opinion received from GCSPS (or where deviation has occurred, justification for this has been provided within the relevant technical ES chapter).

2.74 A summary of the key scoping consultation points has been presented within the introductory table of each technical chapter (**ES Volume 1, Chapters 6 to 15**) providing an intext summary of the consultation undertaken.

2.75 The EIA Scoping process identified the environmental technical topics which are considered unlikely to give rise to significant environmental effects and, therefore, do not need to be assessed further as part of the EIA. Full justification for scoping these technical topics out of the EIA can be found within **ES Volume 3, Appendix: EIA Methodology – Annex 1**.

'Scoped-In' Topics

2.76 The environmental disciplines that were identified during the EIA Scoping process that could potentially give rise to likely significant effects and that have therefore been addressed by EIA are listed below:

- Socio-Economics (**ES Volume 1, Chapter 6**);
- Traffic and Movement (**ES Volume 1, Chapter 7**);
- Air Quality (**ES Volume 1, Chapter 8**);
- Noise and Vibration (**ES Volume 1, Chapter 9**);
- Built Heritage (**ES Volume 1, Chapter 10**);
- Ecology and Biodiversity (**ES Volume 1, Chapter 11)**;
- Land Take and Soils (Agriculture) (**ES Volume 1, Chapter 12)**;
- Ground Conditions and Land Contamination (**ES Volume 1, Chapter 13)**;
- Water Resource, Flood Risk and Drainage (**ES Volume 1, Chapter 14**);
- Climate Change (**ES Volume 1, Chapter 15**); and
- Landscape and Visual Impact Assessment (**ES Volume 2**).

'Scoped-Out' Topics

2.77 The EIA Scoping process also identified the environmental topic areas which are not likely to give rise to significant environmental effects and therefore were not assessed further as part of the EIA process. The EIA Scoping Report is provided at **ES Volume 3, Appendix: EIA Methodology – Annex 1** and includes the justification for why these topics are unlikely to have significant effects and are therefore 'scoped out' of the ES. This reasoning was agreed with GCSPS via their EIA Scoping Opinion and as such, further consideration of these topics within this ES is not required. These 'scoped out' topics include:

- Archaeology;
- Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare;
- Human Health;
- Project Vulnerability;
- Waste and Materials; and
- Wind Microclimate.

2.78 Any necessary mitigation measures relating to these topics that was detailed within the EIA Scoping Report is included in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring**, for completeness.

ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

2.79 The method behind the EIA process generally considers the existing conditions of the area into which the Proposed Development is being introduced (**the baseline**), providing a future baseline context for assessments where relevant, and makes reasonable predictions of the likely change (**the impact – in terms of magnitude**) that may occur, during enabling, demolition and construction works and when the Proposed Development is completed and operating as proposed. The predicted impact is considered in terms of key environmental and social aspects (**receptors**) found within the surrounding area, and based on their sensitivity to change, the scale of the resulting change experienced by the receptor/ resource (**the effect**) is then determined along with a statement on whether the effect is significant or not.

2.80 Any mitigation measures required to reduce or eliminate adverse effects are then considered and assessed, with the resulting residual effect scale being determined as significant or not.

2.81 Effects resulting from a combination of the Proposed Development and other surrounding schemes (**cumulative schemes**) are also assessed. All the likely effects of the development are reported (**within an Environmental Statement)** – this document (**ES Volume 1**) in addition to **ES Volume 2, ES Volume 3** and the **Non-Technical Summary** (**NTS**) and the likely significant effects are specifically highlighted.

Baseline Conditions

2.82 The purpose of the EIA is to predict how environmental conditions may change as a result of the Proposed Development. The assessment of the magnitude of impact and then the resulting scale and nature of effect is undertaken against a reference condition, known as the baseline. The baseline represents the environmental condition of the site and the surrounding area at the time of the assessment.

2.83 Baseline assessments utilise any existing and available information, as well as new information either collected through baseline surveys undertaken during the EIA process or additional information provided as part of the EIA Scoping and the consultation process. This information has been used in the ES to present within each of the individual technical ES chapters (**ES Volume 1, Chapters 6 to 15**) an up to date description of the current baseline conditions of the site and surrounding area.

2.84 For most technical disciplines, the baseline has been taken as the existing conditions within the site and the surrounding area, at the time of assessment (i.e. in the assessment year of 2025), although in defining the baseline conditions, data from preceding years may be used where the data remains relevant (e.g. with regards to air quality).

2.85 In all cases, the source of the baseline data and the justification for its use has been clearly described within the ES (**ES Volume 1, Chapters 6 to 15**).

2.86 As described in the '*Planning Context and History'* section of this ES chapter, Phase 1 of the 2013 OPP is being progressed under various planning applications and RMAs. As such, the immediate context of the site is subject to change. To ensure a reasonable worst-case scenario to capture potentially sensitive receptors within Phase 1 of the 2013 OPP, consideration has been given to which parcels of land will be constructed and operational prior to the commencement of works on the Proposed Development (Table 2.2), and therefore need to be considered as part of the baseline.

2.87 As shown in Table 2.2, the following plots of Phase 1 of the 2013 OPP are complete and operational and therefore will be considered within the baseline scenario:

- Lot 1
- Lot 2
- Lot 3
- Lot 5
- Lot 6
- Lot 7
- Lot 8
- Plot M2
- Plot S3
- Plot H

2.88 The following plots are currently under construction and nearing completion (due to be completed by the end of 2025), and therefore will also be considered as part of the baseline scenario:

- Lot 4
- Plot M1
- Plot M3
- Plot S1/S2

2.89 As these plots are not currently occupied, the future population and vehicle trips associated with these plots are therefore not captured within the baseline data used for the socio-economics assessment, or the baseline traffic flows for the traffic and movement assessment. The socio-economics assessment (within **ES Volume 1, Chapter 6: Socio-Economics**) and traffic and movement assessment (**ES Volume 1, Chapter 7: Traffic and Movement**) have therefore considered the plots listed in paragraph 2.86) within the future baseline scenario (see '*Future Baseline*' section below).

2.90 Plot M4 / M5 are not anticipated to be completed until after 2027 and therefore has been considered with their existing / current use in the baseline condition i.e. a cleared site. The consented future use will be addressed within the cumulative effects assessment (refer to '*Cumulative Effects and Effect Interactions*' section of this ES chapter).

Future Baseline

2.91 For most technical disciplines, the baseline has been taken as the existing conditions within the site. However, in some cases it may be necessary to apply a 'future' baseline[27](s). This is relevant when considering the peak construction year once the development is operational but not yet completed and fully occupied. A future baseline is also used for some technical disciplines, when considering potential effects of the Proposed Development once it is complete and fully operational.

2.92 Where this is required, the approach to defining the future baseline has been explained (with reference to the assessment scenarios) within the relevant technical ES chapter (for example **ES Volume 1, Chapter 6: Socio-Economics**, **ES Volume 1, Chapter 7: Traffic and Movement**, **ES Volume 1, Chapter 8: Air Quality** and **ES Volume 1, Chapter 9: Noise and Vibration**).

2.93 The sports and playspace areas to be provided within Amenity Cluster A and Amenity Cluster B of Phase 1, described in paragraphs 2.62 and within Table 2.2, are to be delivered prior to the occupation of the Proposed Development and forms part of the wider North West Cambridge Development Masterplan open and playspace strategy. Therefore, this has been considered as part of the future baseline as relevant within the socio-economics assessment (**ES Volume 1, Chapter 6: Socio-Economics**).

[27] *The future baseline takes into account planned change in an area (without the Proposed Development), such as including developments that are either consented or subject to planning applications but not yet determined, and other designations such as site allocations and area planning frameworks.*

Evolution of the Baseline

2.94 In accordance with the requirements of the EIA Regulations, consideration is given as to how the existing baseline conditions may evolve in the future, in the absence of the Proposed Development. The EIA Regulations state that (Schedule 4(3)):

"A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge".

2.95 This requirement is presented within each of the individual technical ES chapters (**ES Volume 1, Chapters 6 to 15**) under the heading '*Evolution of the Baseline Scenario'*. The evolved baseline is a baseline condition at an indeterminate point in the future, for a scenario which assumes all of the cumulative schemes are built in the surrounding environment and that the surrounding environment, including the site, has naturally evolved in the absence of the Proposed Development being implemented. In most cases this has been considered through a qualitative approach (professional opinion).

2.96 The approach taken to providing an outline of the evolution of the baseline is described within each of the individual technical ES chapters (**ES Volume 1, Chapters 6 to 15**).

Potentially Sensitive Receptors

2.97 When undertaking an EIA, it is important to identify key potential receptors from the surrounding baseline context which may be impacted by the Proposed Development and may need to be considered as part of the assessment. The EIA process has included the identification and assessment of impacts to and effects on potentially sensitive receptors, which include those within the baseline (or future baseline, as relevant) conditions.

2.98 Within each of the technical ES assessments (**ES Volume 1, Chapters 6 to 15**), a list of sensitive receptors is presented, which are considered to have the potential to be affected by the Proposed Development.

2.99 The receptors addressed within the technical ES chapters have been identified from a review of the available information collected as part of the description of the surrounding environmental context for each technical assessment, from historic and currently available information relating to the site itself. The study area will vary depending on the technical assessment in question. The study area for each assessment will be defined in its respective ES chapter.

Identification of Impacts, Effects and Effect Significance

Terminology and Definitions

Reference to 'Impact' and 'Effect'

2.100 It is noted that the terms 'impact' and 'effect' are distinctly different. Having gained an understanding of the likely impact it is then important to know whether the change in environmental conditions results in a significant environmental effect. The impacts of the Proposed Development may or may not result in significant effects on the environment, depending on the sensitivity of the receptor and possible other factors (such as duration). The assessment of the likely significant effects of the development is a requirement identified by Schedule 4 of the EIA Regulations.

Receptor Sensitivity and Magnitude of Impact

2.101 To achieve a consistent approach across the different technical disciplines addressed within the ES, assessments have broadly defined the sensitivity of the receptors that could be affected by the Proposed Development and the magnitude of impact or change from the baseline conditions in order to derive the resultant effect. Technical specialists have used their own approach or amended the approach stated below based on what is appropriate for their assessments and, where there has been any departure, this is explained within the relevant ES chapter.

2.102 Terminology to describe the sensitivity of receptors and magnitude of impact or change from the baseline conditions is broadly as follows:

- High;
- Medium;
- Low; or
- Negligible.

2.103 Where there is no impact / change, no assessment will be required due to there being no potential for significant effects.

2.104 Each of the technical chapters of the ES (**ES Volume 1, Chapters 6 to 15**) has provided further detail on the definition of each of the above terms specific to the topic in question and will also provide the criteria, including sources and justifications, for quantifying the different levels of receptor sensitivity and 'impact magnitude'. Where possible, this has been based upon quantitative and accepted criteria (for example, national standards for air quality and noise), together with the use of value judgement and expert interpretation.

2.105 Alternatively, some technical ES chapters differ in the terminology adopted to describe the magnitude of impact or change from the baseline conditions (due to industry standards or specific technical policy and guidance). Where this occurs, the alternative terminology adopted has been clearly set out within the individual ES chapter.

Likely Significant Effects

Identification of a Resultant Effect

2.106 The basis for determining the resultant effect generally takes into account the sensitivity of the receptor and magnitude of impact or change from the baseline conditions. A generic matrix that combines the sensitivity of the receptor and the magnitude of impact to identify the resultant effect is provided within Table 2.3 although where this differs for a technical topic, this has been clearly stated in the topic's methodology.

Table 2.3 Scale of Effect Matrix

Receptor Sensitivity	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

Identification of Scale of Effect

2.107 Table 2.4 provides the broad definition of the 'scale' of the resultant effect i.e., definitions of Major, Moderate, Minor and Negligible effects. The definitions in Table 2.4 may be adjusted to suit the technical topic in question; where this is the case revised definitions of effect scale are presented in the technical assessment chapters (**ES Volume 1, Chapters 6 to 15**).

2.108 Where there is no impact to a receptor and therefore no effect, this has been stated.

Table 2.4 Broad Definitions of the Scale of the Effect

Scale of Effect	Description
Major	These effects may represent key factors in the decision-making process. Major effects generally result from receptors of high sensitivity (such national importance or likely to be important considerations at a regional or district scale) and/ or impacts of a high magnitude (such as the loss of large areas of land). Major effects can also result from receptors of medium sensitivity combined with an impact of a high magnitude, or receptors of high sensitivity combined with an impact of a medium magnitude.
Moderate	These effects, if adverse, are likely to be important at a local scale and on their own could have a material influence on decision-making. Moderate effects generally result from receptors of medium sensitivity combined with an impact of a medium magnitude. Moderate effects can also result from receptors of low sensitivity combined with an impact of a high magnitude, or receptors of high sensitivity combined with an impact of a low magnitude.
Minor	These effects may be raised as local issues and may be of relevance in the detailed design of the project but are unlikely to be critical in the decision-making process. Minor effects generally result from receptors of medium sensitivity combined with an impact of a low magnitude, or receptors of low sensitivity combined with an impact of a medium magnitude.
Negligible	Effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error, these effects are unlikely to influence decision making, irrespective of other effects. Negligible effects generally result from receptors of low sensitivity, combined with an impact of a low magnitude.

Effect Nature

2.109 Table 2.5 provides definitions of the 'nature' of the resultant Minor, Moderate or Major effect i.e. definitions of Adverse, Beneficial and Neutral.

Table 2.5 Definition of the Nature of the Resultant Effect

Type of Effect	Description
Adverse	Detrimental or negative effects to an environmental / socio-economic resource or receptor. The quality of the environment is diminished or harmed.
Beneficial	Advantageous or positive effect to an environmental / socio-economic resource or receptor. The quality of the environment is enhanced.
Neutral	Either there is no noticeable beneficial or adverse effect, or the effect is considered neither beneficial nor adverse overall, having made a 'net equation' judgment that takes into account both beneficial and adverse impacts.

2.110 Significant neutral environmental effects are only included where relevant within the Landscape and Visual Impact Assessment as per the relevant guidance[28] . The methodology of the 'neutral' classification is clearly outlined in the methodology section of the assessment within **ES Volume 2, Landscape and Visual Impact Assessment.**

Geographic Extent of Effect

2.111 The ES identifies the geographic extent of the identified effects. At a spatial level, 'site' or 'local' effects are those affecting the site and neighbouring receptors, while effects upon receptors in GCSPS beyond the vicinity of the site and its neighbours are considered to be at a 'district' level. Effects affecting Cambridgeshire are considered to be at a 'county' level; those affecting the East of England at a 'regional' level; whilst those which affect different parts of the country, or England as a whole, are considered being at a 'national' level.

[28] *Guidelines for Landscape and Visual Impact Assessment (GLVIA)*

Effect Duration

2.112 For the purposes of the ES, effects that are generated as a result of the enabling, demolition and construction works (i.e. those that last for this set period of time) are classed as 'temporary'; these may be further classified as either 'short-term' or 'medium-term' effects depending on the duration of the enabling, demolition and construction works that generate the effect in question. Effects that result from the completed and operational phases of the Proposed Development are classed as 'permanent' or 'long-term' effects.

Direct and Indirect Effects

2.113 The ES identifies whether the effect is 'direct' (i.e. resulting without any intervening factors) or 'indirect' or 'secondary' (i.e. not directly caused or resulting from something else).

Significance of Effect

2.114 Following identification of an effect and the implementation of mitigation measures, the residual effect's scale, nature, geographic extent and duration and whether the effects are direct or indirect, using the above summarised terminology, has been summarised in a clear statement within **ES Volume 1** and **ES Volume 2** and used to ascertain as to whether the residual effect is significant or not significant. Each technical assessment determines at what scale an effect is deemed to be significant, as this varies depending on the topic.

2.115 As a general rule, the following applies (although where this differs for a technical topic, this has been clearly stated in the topic's methodology):

- 'Moderate' or 'Major' effects are deemed to be 'significant';
- 'Minor' effects are considered to be 'not significant', although they may be a matter of local concern; and
- 'Negligible' effects are considered to be 'not significant' and not a matter of local concern.

2.116 Where mitigation measures are identified to either eliminate or reduce likely adverse effects, these have been incorporated into the ES, for example, either as enabling, demolition and construction commitments; or operational or managerial standards/ procedures. It should be noted that mitigation is not required for effects that are deemed to be negligible as the effect will be imperceptible. Those measures not inherent in the design of the Proposed Development (i.e. submitted for approval as part of the OPA), will need to be secured through an appropriate means by GCSPS e.g. via a suitably worded planning condition or obligation in a S106 agreement.

2.117 The ES then highlights the 'residual' effects (those effects which remain following the implementation of suitable mitigation measures) and classifies these in accordance with the terminology defined above.

2.118 In all cases, the overall approach and specific methods of predicting the likely magnitude of impact and resultant scale, nature, geographic extent, duration and significance of an effect is set out in each of the technical assessments. Where used, recognised specific predictive methods are referenced. Any assumptions or limitations relevant to the assessments are stated.

Impact Assessment – General Methodology

2.119 Detailed methodologies for the assessment of each of the environmental topic areas scoped into the EIA are provided within each technical chapter of **ES Volume 1** (**Chapters 6 to 15**), however, in general terms, the assessments have been based upon:

- Desk-top studies;
- Site surveys;
- Consideration of relevant legislation;
- Consideration of relevant planning policies (national, regional and local);
- Consideration of potentially sensitive receptors that could be affected by the Proposed Development;
- Identification of likely environmental impacts, with an evaluation of their likely magnitude, and resultant effects in terms of their nature, scale, geographic extent, duration and whether they are direct or indirect or transboundary;
- Consideration of the requirement for any specific mitigation;
- Expert opinion;
- The use of technical guidance and best practice; and
- Specific consultations with appropriate organisations.

2.120 As part of the EIA, an iterative approach has been adopted where significant environmental effects have been avoided where possible in the first instance through design refinements and iterations, as reported upon within **ES Volume 1, Chapter 3: Alternatives and Design Evolution**. Where adverse environmental effects were identified through early assessment work, opportunities to reduce or control impacts and effects have been identified and incorporated into the Proposed Development and associated Control Documents. In addition, opportunities to enhance the beneficial environmental effects of the Proposed Development have also been sought and incorporated into the Proposed Development.

2.121 Within each technical chapter of this ES, the assessment of the potential effects that are likely to arise because of a potential impact/ change to receptors from the Proposed Development is initially presented. If any mitigation measures are required, further to those already integrated into the Proposed Development throughout its design evolution, these are incorporated and considered, and the Proposed Development is reassessed to ascertain the likely residual effects following their implementation and identify any which are significant. This is reported on within each technical chapter of this **ES** (**Volume 1, Chapters 6 to 15**).

2.122 Mitigation is the term used to refer to the process of avoiding where possible and, if not, minimising, controlling and/ or off-setting potentially significant adverse effects of a development. Mitigation measures can relate to the design stage; the enabling, demolition and construction stage; or the activities associated with the operation of the completed Proposed Development.

2.123 How the Proposed Development might affect the environment, relies on predictions about what impact a certain action will have. Some predictions can be made using mathematical or simulation models. Other impacts are less easy to predict in quantitative terms. In such cases, the EIA attempts to quantify the anticipated scale of impact using professional judgement.

Enabling, Demolition and Construction Works of the Proposed Development

2.124 **ES Volume 1, Chapter 5: Enabling, Demolition and Construction** provides an outline of the anticipated enabling, demolition and construction programme and related activities and aspects (i.e. enabling works, demolition works, substructure works, superstructure works etc., site clearance and excavation waste volumes and construction material quantities, heavy goods vehicle (HGV) movements and HGV routing). The peak periods of monthly HGV movements, and monthly averages, associated with the enabling, demolition and construction works are also presented.

2.125 Where relevant, a peak construction year has been considered based on when construction activities are anticipated to be greatest. This is based on when construction road traffic and construction activities are anticipated to be highest. An interim construction scenario has also been considered, where relevant, when construction is underway on the later phases and the initial phases of the Proposed Development are complete and occupied.

2.126 The programme represented is based on reasonable assumptions in terms of the sequencing of the works and site logistics that will be implemented. The programme is considered achievable based on the current level of enabling, demolition and construction planning and anticipates the period of construction works are continuous.

2.127 The programme presents an overlap of construction activities with other stages of work and therefore assumes multiple construction activities occurring across the site. It is also assumed that impacts of a higher magnitude over a shorter duration are considered to be potentially greater in terms of the likely effect on a receptor, than an impact of lower magnitude spread over a longer duration. The EIA, therefore, assesses the reasonable worst-case effects (in terms of magnitude of impact) as a result of multiple construction activities occurring on-site at any particular time.

2.128 The information presented within **ES Volume 1, Chapter 5: Enabling, Demolition and Construction** informs the enabling, demolition and construction impact assessments of each technical chapter (**ES Volume 1, Chapters 6 to 15**) of the ES. Throughout the enabling, demolition and construction impact assessments, the assumption has been made that the standard environmental controls required under legislation and best practice guidance are met as a matter of course.

2.129 The enabling, demolition and construction works assessments presented within the technical chapters of the ES identify the need for any additional or bespoke environmental management or mitigation measures in order to avoid, prevent, reduce or off-set any significant adverse effects identified.

2.130 Where relevant and required, a description of any proposed monitoring arrangements has also been presented and defines (where appropriate) the procedures regarding the monitoring of the relevant significant adverse effects, the types of parameters to be monitored and the monitoring duration.

2.131 All the measures proposed within the technical chapters have been compiled and presented in a mitigation and monitoring schedule for ease of reference (presented in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring**).

Completed and Operational Proposed Development

2.132 The ES presents a description of the Proposed Development sought for approval in **ES Volume 1, Chapter 4: The Proposed Development**, in order to provide suitable context to enable the assessment of potential and likely significant environmental effects. The impact assessment of the Proposed Development is based on the information contained within the Control Documents and as described in **ES Volume 1, Chapter 4: The Proposed Development**.

2.133 The assessment of the nature and scale of a predicted change is undertaken against the baseline. In most cases, the baseline represents the environmental condition of the site and the surrounding area at the time of the assessment (as described within this chapter). The specific methodology for assessment of the Proposed Development (including the parameters assessed to predict a reasonable worst-case assumption) has been set out within each technical chapter or assessment presented in **ES Volume 1**.

2.134 The details sought for approval are set out within sections '*Format of the Outline Planning Application*' and '*Basis of Assessment*' earlier in this ES chapter.

Cumulative Effects and Effect Interactions

2.135 The EIA Regulations require that, in assessing the effects of a particular development proposal, consideration should also be given to the likely significant effects arising from the "*cumulation with other existing and/or approved projects*" (Schedule 4, 5(e)).

2.136 Cumulative effects can occur as interactions between the effects associated with a number of projects in an area which may, on an individual basis be insignificant, but together (i.e. cumulatively), result in a significant effect. Cumulative effects arising from the Proposed Development in combination with other development schemes ('cumulative schemes') has been considered throughout the ES. The potential for cumulative effects arising during the construction works and once the Proposed Development is complete and operational is considered.

2.137 Each individual technical chapter of the ES presents an assessment of the cumulative effects of the Proposed Development coming forward in isolation alongside other surrounding cumulative schemes as agreed with the GCSPS.

2.138 The EIA identifies the potential for the following, which is described below:

- Inter Cumulative Effects – Cumulative Effects with Other Developments; and
- Intra Cumulative Effects – Effect Interactions

Cumulative Effects with Other Developments

2.139 Cumulative effects arising from the Proposed Development in combination with 'other existing and / or approved projects' ('cumulative schemes') during enabling, demolition and construction and also once the Proposed Development is completed are considered throughout the ES. Each individual technical chapter of the ES presents an assessment of the cumulative effects of the Proposed Development coming forward alongside the cumulative schemes.

2.140 The cumulative schemes that are considered within the ES are typically located within a 1km radius from the centre of the site, as based on experience and professional judgement, this spatial extent is considered appropriate for determining cumulative effects in this locality.

2.141 The criteria listed below have been set to allow all the schemes coming forward within CCC and SCDC to be subject to an initial screening exercise to determine the schemes that, based on the scale of development (amount and mix of uses), could potentially have a cumulative effect with the Proposed Development and should be considered further within the Cumulative Effects Assessment of the technical ES chapters (**ES Volume 1, Chapters 6 to 15**). These criteria are as follows:

- Development located within a 1km radius from the site, that is subject to a planning application (and is either yet to be determined, have planning consent or a resolution to grant) comprising either;
  - An uplift of more than 10,000m^2 (Gross External Area (GEA) of mixed-use floorspace), or over 150 dwellings; or
  - Office to residential conversions (granted under the General Permitted Development Order) giving rise to more than 150 residential units; or
  - Any development / change of use adjacent to the site.

2.142 By applying these criteria to relevant schemes coming forward, the Cumulative Effects Assessment of the EIA becomes more focused on the schemes which, based on the scale of redevelopment (amount and mix of uses) and location relevant to the site, have more potential to interact in a cumulative manner. Each technical chapter of the ES is clear on the cumulative schemes that have been considered within the Cumulative Effects Assessment of the topic in question, including a reasoning behind their inclusion. Where cumulative schemes are 'screened out' of the Cumulative Effects Assessment, the reasoning for doing so has been presented.

2.143 In some instances, schemes that are under construction, where the construction works are significantly progressed or where early phases are occupied, will be factored into the baseline conditions (as a future baseline). As relevant, this is clearly set out within each individual topic's Cumulative Effects Assessment methodology text.

2.144 The cumulative schemes considered within the EIA, which have been agreed through the EIA Scoping process with GCSPS are included below within Figure 2.3 and further details of the schemes are provided within **ES Volume 3, Appendix: EIA Methodology – Annex 3**.

1) West Cambridge Site
2) Darwin Green Phases Two and Three
3) Girton College
4) Darwin Green Phase One
5) National Institute of Agricultural Botany (NIAB)
6) 137 and 143 Histon Road
7) Grange Farm Site

8) Gusto Mills

2.145 As described in paragraph 2.74, Plot M4 / M5 within Phase 1 is due for completion in 2028, and therefore has also been considered within the cumulative effects assessment, where relevant.

2.146 It is noted that GCSPS provided the following response in their EIA Scoping Opinion with regards to the cumulative schemes to be assessed:

"…It should be noted that are a number of infrastructure projects within the vicinity of the site, including the Cambourne to Cambridge busway where there may be potential for cumulative effects. ".

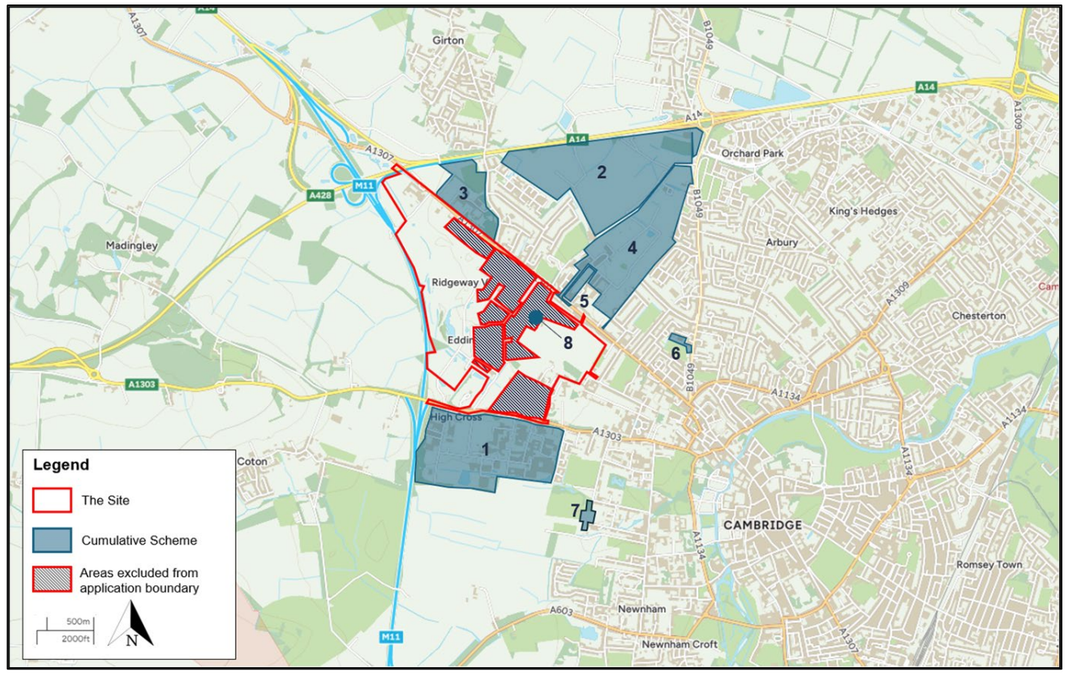
2.147 Due to the nature of the Cambourne to Cambridge (C2C) busway, and the distance to the site, it is considered these schemes are not likely to result in cumulative effects, and therefore the C2C busway has not been considered any further within the ES. However, as agreed with GCSPS via the EIA Scoping process, additional schemes relating to traffic and movement (and the road traffic noise and air quality road traffic emissions assessments) have been considered as part of the cumulative assessment, given their location and impact on the shared road network with the Proposed Development. These additional schemes are detailed in Table 2.6.

Table 2.6 Traffic and Movement Cumulative Schemes

Name	Planning Reference	Description	Status
Cambridge East	N/A	Not subject to a planning application. Allocated site within the Cambridge East Area Action Plan[29] for the redevelopment of Cambridge Airport to create a new urban quarter that transforms the east of the city, delivering new homes, jobs, facilities, infrastructure, and opportunities for Cambridge.	N/A
Northstowe New Town Phase 3B	20/02171/OUT	Outline planning application for the development of Northstowe Phase 3A for up to 4,000 homes, two primary schools, a local centre (including employment, community, retail and associated services, food and drink, community, leisure, residential uses and other accommodation), secondary mixed use zones (including employment, community, retail and associated services, food and drink, community, leisure, residential uses), open space and landscaped areas, sports pitches, associated engineering and infrastructure works, including the retention of the existing military lake and creation of a new lake, with details of appearance, landscaping, layout, scale and access reserved. Application is accompanied by an Environmental Statement and involves works to/affecting existing Public Rights of Way.	Approved 25 March 2022.
West Cambourne	S/2903/14/OL	Development of up to 2350 residential units including affordable housing retail use classes A1-A5 (up to 1.04 ha) offices/light industry use class B1 (up to 6.25ha) community and leisure facilities use class D1 and D2 (up to 0.92 ha) Two primary schools and one secondary school (up to 11 ha) use class D1 three vehicular access points including the extension and modification of Sheepfold Lane a four arm roundabout provided on A1198/Caxton Bypass and an access point off the A1198 south of the Caxton Gibbet to serve the proposed employment uses a network of segregated pedestrian and cycle routes sustainable drainage system and other infrastructure together with associated earth works parking open space including equipped play playing fields and landscaping.	Approved 29 December 2017
Bourne Airfield	S/3440/18/OL	Outline planning permission for a new mixed use village comprising residential development of approximately 3500 dwellings mixed uses comprising employment retail hotel leisure residential institutions education community facilities open space including parks ecological areas and woodlands landscaping engineering for foul and sustainable urban drainage systems footpaths cycle ways public transport infrastructure highways including a principal eastern access from the roundabout on St Neots Road and western access with Broadway including first section of strategic public transport route associated infrastructure groundworks and demolition with all matters reserved except for the principal highway junctions from the St Neots Road roundabout and onto Broadway with some matters reserved except for access. This application is subject to an Environmental impact assessment.	Approved 30 July 2024.

[29] *Cambridge City Council and South Cambridgeshire District Council (2008); Cambridge East Area Action Plan, Local Development Framework*

Figure 2.3 Cumulative Schemes



Effect Interactions

2.148 Effect interactions from the Proposed Development itself on surrounding sensitive receptors during the enabling, demolition and construction works and also once the Proposed Development is completed and operational are considered within this ES (**ES Volume 1, Chapter 16: Effects Interactions**). Effect interactions occur as interactions between effects associated with just one project, i.e., the combination of individual effects arising as a result of the Proposed Development, for example effects in relation to noise and airborne dust on a single receptor.

2.149 Effect interactions from the Proposed Development itself on particular receptors at the site and surrounds are considered during the demolition and construction works, and also once the Proposed Development is completed and operational. Dependent on the relevant sensitive receptors, the assessment focuses either on key individual receptors or on groups considered to be most sensitive to potential effect interactions. Based on the definitions of what Negligible effects comprise for each of the technical assessments, these do not warrant further consideration in relation to cumulative effects and therefore have not been pulled through into the assessment of effect interactions. Only residual effects described as Minor and above have therefore been considered in the assessment of effect interactions.

2.150 There is no established methodology for assessing the impact of cumulative effects on a particular receptor. Therefore, the interaction of a combination of individual effects are determined to be either 'not significant' or 'significant', and a scale of the combined effects (Minor, Moderate or Major) is not applied. However, the European Commission has produced guidelines to assist EIA practitioners in developing an approach which is appropriate to a project. These guidelines have been used to develop an approach which uses the defined residual effects of the Proposed Development (as presented within the technical chapters of the ES) to determine the potential for effect interactions. If one of the individual effects is significant the combination of effects would be regarded as 'significant' (with the exception of any Negligible effects). If none of the individual

effects are significant, consideration will be given as to whether or not the combination of many not significant effects could result in a combined significant effect, based on professional opinion.

STRUCTURE OF TECHNICAL ASSESSMENTS

2.151 This ES reports on the potential (before mitigation) and residual (after mitigation) environmental effects of the Proposed Development during the enabling, demolition and construction works and on subsequent completion and operation. The ES also concludes with a summary of the likely significant beneficial, neutral and adverse environmental effects of the Proposed Development (**ES Volume 1, Chapter 17: Likely Significant Effects**).

2.152 Each of the environmental topics considered in the EIA has been assigned a separate chapter in **ES Volume 1**. Within each of the **ES Volume 1** technical chapters the assessment is presented and reported in the following format:

- An Introductory Table – setting out the author of the technical topic assessment, identification of relevant appendices, key topic related considerations and consultation as part of the EIA Scoping process and further consultation with relevant statutory consultees (if relevant);
- Assessment Methodology – an explanation of the approach to defining the baseline conditions and assessment scenarios and evolved baseline conditions, the approach to undertaking the impact assessment (construction and operation, and any key assumptions made) and the definitions of the nature and scale of effect and what effects are deemed to be significant;
- Baseline Conditions – a description of the baseline conditions of the site and surrounding area (as relevant to the technical topic in question) in addition to consideration of future baseline conditions (where relevant);
- Receptors and Receptor Sensitivity – identification of the existing receptors on the site and in the surrounding area that may be affected by the Proposed Development and identification of their sensitivity;
- Embedded Mitigation – details any mitigation measures assumed to be embedded within the Proposed Development and are therefore factored into the assessment of potential effects;
- Potential Effects – an assessment of the likely significant effects of the Proposed Development during the enabling, demolition and construction works and on completion, setting out the impacts and effects associated with each aspect of the assessment and an evaluation of their significance against defined criteria without the implementation of mitigation;
- Mitigation Measures, Monitoring and Residual Effects – a description of the mitigation measures that are being committed to and a summary of the residual effects of the Proposed Development;
- Site Suitability – a description of site suitability assessments undertaken for the Proposed Development, included where relevant to the technical topic;
- Assessment of Future Environment – an assessment of the likely significant effects of the Proposed Development in relation to both an evolution of the baseline conditions and any in combination effects with the agreed cumulative schemes; and
- Likely Significant Effects – a short statement confirming which residual effects are considered to be significant for both the Proposed Development, as well as residual cumulative effects with surrounding cumulative schemes.

2.153 **ES Volume 2** comprises the Landscape and Visual Impact Assessment which follows its own bespoke format.

KEY ASSUMPTIONS AND LIMITATIONS

2.154 The principal assumptions that have been made, and any limitations that have been identified, in undertaking the EIA are set out below. Assumptions specifically relevant to each technical topic have been set out in each technical chapter of the ES.

- Baseline conditions have been established from a variety of sources, including historical data and are accurate at the time of writing;
- It is assumed that information received from third parties is accurate, complete and up to date;
- The assessments contained within each of the **ES Volume 1** technical chapters are based on a 'reasonable, worst-case scenario' that assesses the maximum parameters of development as part of the OPA. Where these parameters are not considered to be a reasonable worst-case assessment or alternative assumptions have been made to facilitate a reasonable worst-case assessment, this is clearly set out where relevant within the methodologies of the **ES Volume 1** technical chapters;
- The assessment of residual effects contained within each of the technical ES chapters of the ES (**ES Volume 1, Chapters 6 to 15**) are based on the assumption that the identified embedded mitigation measures are implemented – be it as set out in application drawings, design code, through regulatory regimes or via the mitigation and management controls, described within **ES Volume 1, Chapter 4: Proposed Development** and **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**, and **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring**;
- Enabling, demolition and construction works across the site would take place substantially in accordance with the programme of works described in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction** ;
- Where detailed information has not been available, reasonable assumptions have been made, and have been clearly set out, based on experience of developments of similar type and scale to enable assessment of likely significant effects; and
- Cumulative schemes will be implemented substantially in accordance with information that is publicly available and subject to the same regulatory regimes and good practice management controls as this Proposed Development.

Chapter 3: Alternatives and Design Evolution

TRIUM

INTRODUCTION

3.1 This chapter of the Environmental Statement (ES) summarises the main design alternatives considered by the Applicant and details the environmental considerations (including opportunities and constraints) that have influenced the design. Following this, a narrative is provided on the evolution of the selected option for the site, focusing on key design modifications that were made during the design process. Environmental considerations which have influenced the design evolution process are discussed where relevant.

SITE AND SURROUNDING CONTEXT

Site Description

3.2 The site covers a total area of 114 hectares (ha) and is located across the administrative boundary of both South Cambridgeshire District Council (SCDC) and Cambridge City Council (CCC). The Greater Cambridge Shared Planning Service (GCSPS) manages planning services on behalf of SCDC and CCC.

3.3 The site is roughly triangular in shape and currently comprises majority grassland fields, construction sites, and also incorporates sections of Huntingdon Road (A1307) and Madingley Road (A1303). The majority of the site comprises of topsoil and clay that emerged as a result of Phase 1 development relating to the 2013 Outline Planning Permission (OPP) on the site.

3.4 Vehicular access to the site can be gained via either Huntingdon Road (A1307) to the north or Madingley Road (A1303) to the south of the site. Huntingdon Road (A1307) and Madingley Road (A1303) are linked via Eddington Avenue, which traverses the south-eastern extent of the site.

3.5 Pedestrian access can be gained via the same routes. Pedestrian and cycle access can also be gained via Horse Chestnut Avenue and Bunkers Hill (from Huntingdon Road), as well as Storey's Way and Madingley Rise to the east of the site.

3.6 A Public Rights of Way (Footpath 99/5) crosses the site in the north-west corner, running between Huntingdon Road (A1307) to Cambridge Road, and crossing beneath the M11.

3.7 The Barcroft Centre and associated buildings are located within the most northerly extent of the site, along Huntingdon Road (A1307). The Barcroft Centre is a University of Cambridge (UoC) operated site and currently accommodates research facilities relating to veterinary medicine.

3.8 To the south-east of the site, adjacent to Madingley Rise, is a collection of buildings comprising Gravel Hill Farm, a UoC owned residential home and building accommodating CASP, an independent geological research trust.

3.9 In addition, the site contains areas of hard standing, including an area utilised for parking to the south of the site. The site comprises a variety of amenity and green space, including swales, ponds, grassland, areas of woodland, hedgerows and individual trees. A currently decommissioned storm water recycling system pond is located along the western edge of the site. The Washpit Brook is the closest watercourse to the site which runs through the site from south-east to the north-west.

3.10 The western extent of the site (known as 'Brook Leys') and the 'Girton Gap' within the eastern extent of the site are designated as green belt land. The Girton Gap includes the Traveller's Rest Pit Site of Special Scientific Interest (SSSI). This is a 'Geological Conservation Review' site, which has been designated due to the presence of nationally important geology.

3.11 To the north of the site, beyond Huntingdon Road (A1307), is the village of Girton, which comprises low rise residential properties, Girton College (UoC) and its associated uses, and agricultural fields. To the east of the site is low rise residential properties and Cambridge City Centre is located approximately 2km to the south-east of the site at its nearest point. To the south of the site is Madingley Road Park and Ride.

3.12 Beyond Madingley Road (A1303) to the south is the West Cambridge Innovation District which has uses associated with the University of Cambridge, including the Queen's Veterinary School Hospital, research buildings and the University of Cambridge Sports Centre and Gym. To the west of the site beyond the M11 is mostly agricultural fields and areas of woodland, allocated as Green Belt.

3.13 An aerial photograph of the site and surrounding area is shown in Figure 3.1.

3.14 The surrounding area is characterised by the emerging settlement of Eddington. Phase 1 of the 2013 OPP has delivered the following:

- Residential properties, including market homes, key worker housing and student accommodation units;
- Storey's Field Centre, a new community centre with a range of spaces for uses such as events conferences and local community uses;
- Nursery and University of Cambridge Primary School;
- Sainsbury's supermarket and other local retail units; and
- Sports pitches, open green space and landscaping.

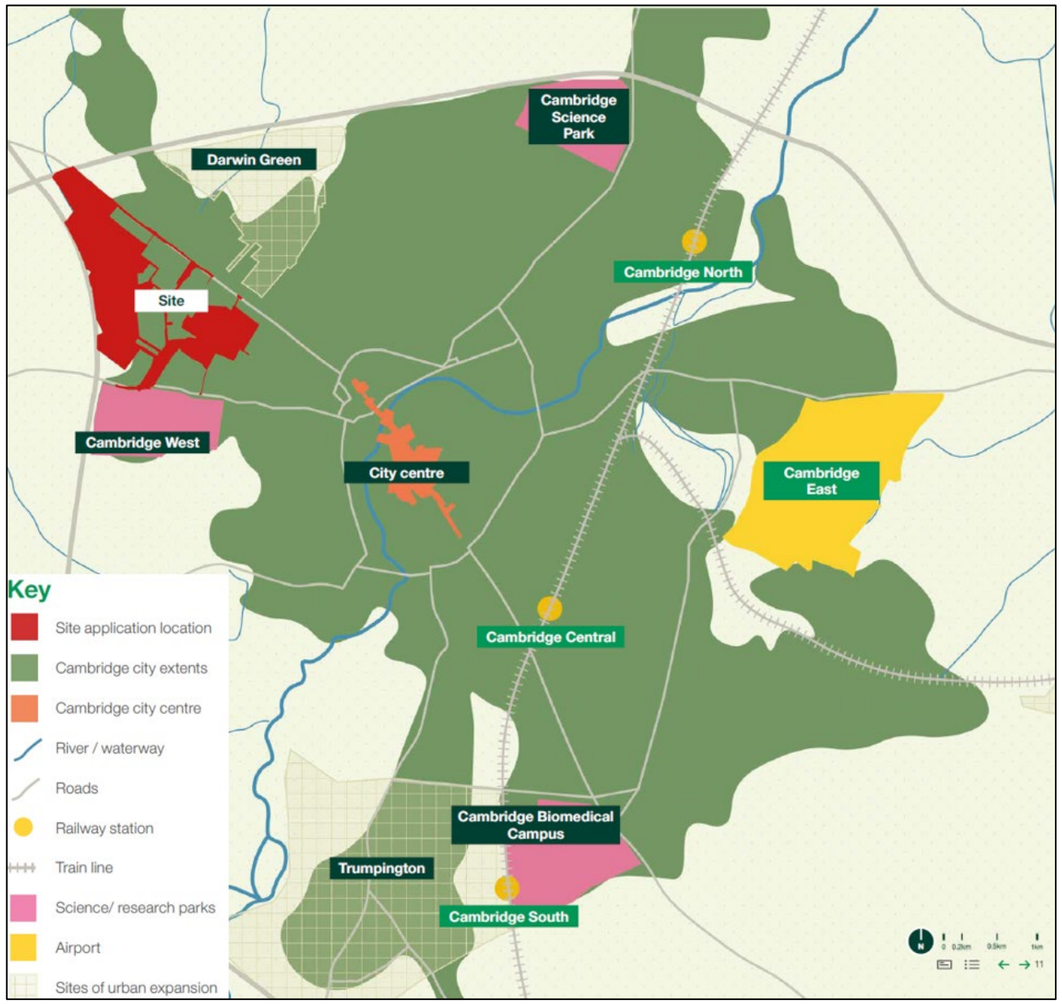
Figure 3.1 Existing Site and Surrounding Area



Future Surrounding Context

3.15 The site is located within a wider network of consolidated and emerging sites, as shown in Figure 3.2, including Darwin Green (Planning Reference: 22/02528/OUT), a residential-led mixed-use development to deliver over 1,000 new homes to the north-east and Cambridge West (Planning Reference: 16/1134/OUT), which will deliver new academic and commercial floorspace to the south.

Figure 3.2 Existing and Emerging Sites



LOCAL ENVIRONMENTAL CONTEXT

3.16 The following environmental considerations were reviewed as part of the design evolution of the Proposed Development and the consideration of layout, scale and design alternatives. Figure 3.4 illustrates the existing site's environmental context.

Ecology and Biodiversity

3.17 Madingley Wood SSSI is located off-site, 1.8km to the west and on the opposite side of the M11. It is designated for its ash-field maple woodland habitat. The site is located within the Impact Risk Zone (IRZ) for this SSSI but is not a development type which is listed as requiring consultation with Natural England, however it does support roosting barbastelle bats

3.18 There are 15 Local Nature Reserves within 10km of the site. These are all located outside of the site boundaries and within central or eastern Cambridge

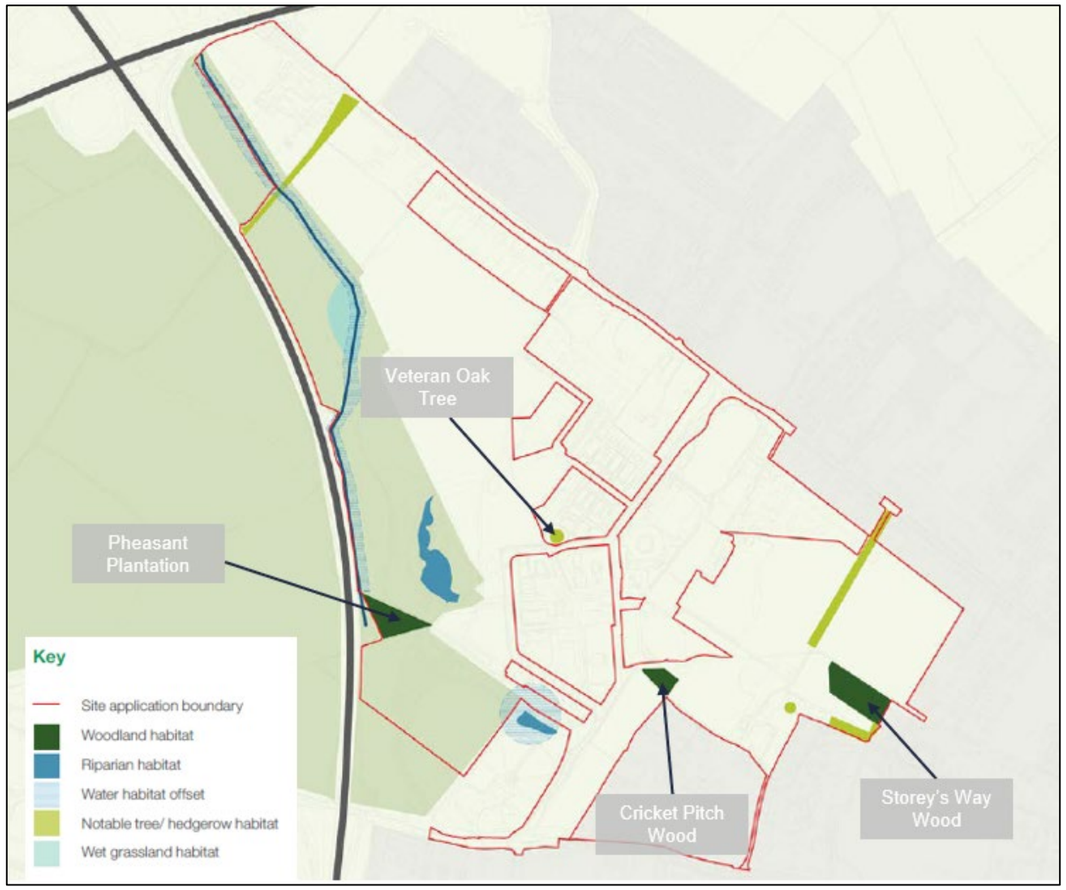
3.19 There are several non-statutory designated nature conservation sites within 2km of the site, none are located within the site. There are three City Wildlife Sites located adjacent to, or within very close proximity to the site boundary. These are Ascension Parish Burial Ground, Bird Sanctuary, and Conduit Head and Scrub East of M11 Verge.

3.20 There is one European Site within 10km: Eversden and Wimpole Woods Special Area of Conservation (SAC), designated for its summer maternity roost of barbastelle bats. The SAC is located off-site, more than 9.5km to the south-west of the site and on the opposite side of the M11 Motorway; no 'functionally linked habitat' is present on site.

3.21 A number of bird species use the site for breeding; these are generally species associated with farmland habitat, woodland and scrub habitat, wetland habitat or urban/suburban habitat. The completion of Phase 1 of the 2013 OPP created two new ponds and a lagoon on site. Otters and Great Crested Newts have been identified on site in these waterways.

3.22 Three areas of woodland are located within the site, including Storey's Way Wood, Cricket Pitch Wood and Pheasant Plantation. A veteran oak tree is located outside of the site boundary, within Phase 1 of the 2013 OPP, as shown in Figure 3.3.

Figure 3.3 Ecological Features



Water Resources, Flood Risk and Drainage

3.23 The topography of the site, shows levels ranging from approximately 21m Above Ordnance Datum (AOD) at the eastern end to around 12m AOD along the western edge of the site. There are localised spoil heaps with elevations reaching 30m AOD which do not cause blockages at the site as it maintains to have a general fall towards the western end – these spoil heaps are temporary in nature and will be removed as part of any future development. Levels on the eastern side of Phase 1 have high points around the central area of approximately 25.5m AOD and fall towards both the west and east, reaching low points of approximately 21m AOD on either side.

3.24 The Washpit Brook is the closest watercourse to the site which runs through the site from south-east to the north-west**.** The extent of the brook that runs across the site is classed as an 'ordinary watercourse'[1], with the downstream section beyond the site classed as a 'main river'[2].

3.25 A flood alleviation scheme has been implemented within the site as part of the Phase 1 OPP works to ensure that the development does not result in increased flooding within the Washpit Brook catchment and offers an amount of reduced flood risk downstream.

3.26 The Brook Leys lagoon and swales delivered as part of Phase 1 of the 2013 OPP forms an attenuation basin and a landscape feature within the site.

3.27 Site investigation undertaken previously in 2010 indicates that groundwater levels are between 0.9m below ground level (bgl) and 3.80m bgl across the site.

3.28 There are no groundwater abstractions within the site. The site is also not located within a groundwater Source Protection Zone (SPZ).

3.29 The site is located largely within Flood Zone 1. Typically, areas within Flood Zone 1 have a less than 0.1% chance of flooding from rivers or the sea in any given year. There is a small area of the site adjacent to the Washpit Brook which is in Flood Zone 2 which has between a 1% and 0.1% chance of flooding from rivers and between a 0.5% and 0.1% chance of flooding from the sea.

3.30 The site is at low risk of surface water flooding with majority of the site outside of the flood extent map. Parts of the site is subject to high risk of surface water flooding (more than 3.3% chance each year). However, these are small localised areas and mostly within the greenfield areas adjacent to the Washpit Brook with flood depths of up to 300mm associated with more than 3.3% chance of surface water flooding.

3.31 The British Geological Survey (BGS) mapping for Areas Susceptible to Groundwater Flooding indicate that western portion of the site has potential for groundwater flooding of properties situated below ground level with small sections on the west end and south end shown to have limited potential for groundwater flooding to occur.

Traffic and Transport

3.32 Vehicular access to the site can be gained via either Huntingdon Road (A1307) to the north or Madingley Road (A1303) to the south of the site. Huntingdon Road (A1307) and Madingley Road (A1303) are linked via Eddington Avenue, which traverses the south-eastern extent of the site. The area is well-served by footways, segregated cycleways, and Public Rights of Way (PRoWs), providing strong pedestrian and cycling connectivity to surrounding areas, including Bar Hill, Hardwick, and Cambridge City Centre.

3.33 The Ridgeway, a shared-use active travel route, provides an east–west connection through the site, linking Huntingdon Road (A1307) in the west to Storey's Way in the east. Storey's Way provides further connections to Madingley Road (A1303) to the south and Huntingdon Road (A1307) to the north, enabling access to the wider Cambridge pedestrian network.

3.34 Madingley Road Park and Ride is located immediately south of the site off Madingley Road (A1303). The Park and Ride aims to intercept traffic from the west and then provides frequent bus services to (and returning) Cambridge City Centre (St Andrews Street Bus Stop). At present, there is approximately 378 car parking spaces at Madingley Road Park and Ride.

3.35 Cambridge Railway Station is located approximately 4km east of the site, and is a key interchange point for rail travel with East Anglia and is situated on the West Anglian Mainline. Cambridge Railway Station provides connectivity to further afield areas such as London, Brighton, Birmingham, Peterborough, Ely, Norwich and Ipswich as well as a range of 'smaller' destinations.

3.36 The internal highway network links to the local highway network, as the site is located between two main routes leading from the M11 to the centre of Cambridge –Madingley Road (A1303) and Huntingdon Road (A1307). Eddington Avenue forms a signalised four arm junction with Madingley Road (A1303), located to the south of the site. To the east, Madingley Road (A1303) connects to Queens Road (A1134) and Northampton Street, and provides connections into the centre of Cambridge. To the west, Madingley Road (A1303) provides a connection to the M11 and also to Madingley (via Cambridge Road) and to the A428. To the north of the site, Eddington Avenue forms a signalised three armed junction with Huntingdon Road (A1307). Storey's Way, located to the east of the site, forms a link between Huntingdon Road (A1307) and Madingley Road (A1303). Storey's Way is a predominantly residential road with traffic calming measures.

[1] *Ordinary watercourses include every river, drain, stream, ditch, dyke, cuts, sluices, culverts, sewer (other than public sewer) and passage through which water flows that do not form part of main rivers.*

[2] *A main river is a type of watercourse designated on the Statutory Main River Map. These are generally larger rivers and streams, but can also include smaller watercourses or drainage channels.*

Ground Conditions and Land Contamination

3.37 According to the BGS mapping[3], the site is underlain in part by Head deposits. River Terrace deposits are shown to be present off-site to the east. Gault Formation (Mudstone) bedrock is present across most of the site, with the West Melbury Marly Chalk Formation shown in a small area in the south-east of the site. There are no mapped faults or linear geological features within the boundary.

3.38 There are currently 12 major stockpiles across the site remaining from construction of Phase 1 of the 2013 OPP. These comprise approximately 205,000m^3 of gault clay and 72,500m^3 of mixed topsoil and subsoil.

3.39 As described above, Traveller's Rest Pit SSSI is located within the eastern extent of the site. This is a 'Geological Conservation Review' site, which has been designated due to the presence of nationally important geology. This site provides a unique exposure of fossiliferous cold stage gravels, sands and silts of a high-level terrace (Observatory Gravels) of the River Cam.

3.40 There are a number of potential sources of contamination identified from historical Ordnance Survey maps within and around the site boundary, including but not limited to, gravel pits, burial grounds and cemeteries, and historic landfill within the site boundary.

Landscape and Visual

3.41 The site is located in a transitional location where the countryside meets this historical urban centre of Cambridge. The western and eastern edges of the site are located within the Green Belt.

3.42 According to the Cambridge Inner Green Belt Boundary Study (2015), the site is located within Townscape Character Type 'Early 21st Century Mixed Use Development', which comprises previously designated Green Belt with varied development, from low-rise flats, linked houses, townhouses and slightly higher rise residential and commercial developments. The site is also located within Townscape Character Area 'North West of Cambridge' which comprises of ongoing development, and a number of bespoke buildings to the west side of Huntingdon Road.

3.43 The urban edge of Cambridge consists of a diverse architectural style with more recent developments contrasting the older residential areas, however, with a sense of coherence in each built form eras. Overall, the townscape area is considered of medium-high value.

Built Heritage

3.44 The site is not located in a Conservation Area and no listed or locally listed buildings are located within the site boundary. West Cambridge Conservation Area is located immediately to the south of the site, and Howes Place Conservation Area is located immediately to the east of the site. There are a number of other Conservation Areas within 750m of the site. There are six listed buildings which are surrounded by the site, but are not located within the planning application redline boundary:

- Lodge, Girton College (Grade II);
- SHAWMS (Grade II*);
- Spring House (Grade II);
- Willow House (Grade II*);
- SALIX (Grade II); and
- White House (Grade II).

Noise and Vibration

3.45 Road traffic is the dominant source of noise across the site, with notable contributions from M11, A14, Huntingdon Road (A1307) and Madingley Road (A1303). There are no significant sources of vibration near the site.

Air Quality

3.46 SCDC has no designated Air Quality Management Areas (AQMAs), CCC has declared an AQMA for "*an area encompassing the inner ring road and all the land within it*" due to exceedances of the annual mean nitrogen dioxide (NO_2) Air Quality Strategy (AQS) objective. This site was revoked in early 2025 due to improved NO_2 concentrations. The site is located approximately 1.5 km from the boundary of this AQMA.

3.47 Neither SCDC nor CCC has measured an exceedance of either of the NO_2 objectives (annual mean of 40µg/m^3, hourly mean of 200µg/m^3) over the most recently reported 5 years (2018-2022), suggesting that air quality in the area is good.

3.48 The main source of air pollution in CCC and SCDC is from road traffic.

Socio-Economics

3.49 The University of Cambridge Primary School is surrounded by the site (but is excluded from the planning application redline boundary). There are a number of primary schools located within Cambridge, including Mayfield Primary School, St Luke's School and Girton Glebe Primary School.

3.50 Chesterton Community College is the closest secondary school to the site, and currently has no surplus capacity. Other secondary schools within a 5km catchment of the site include: North Cambridge Academy, Parkside Community College, Coleridge Community College, Impington Village College, and Trumpington Community College.

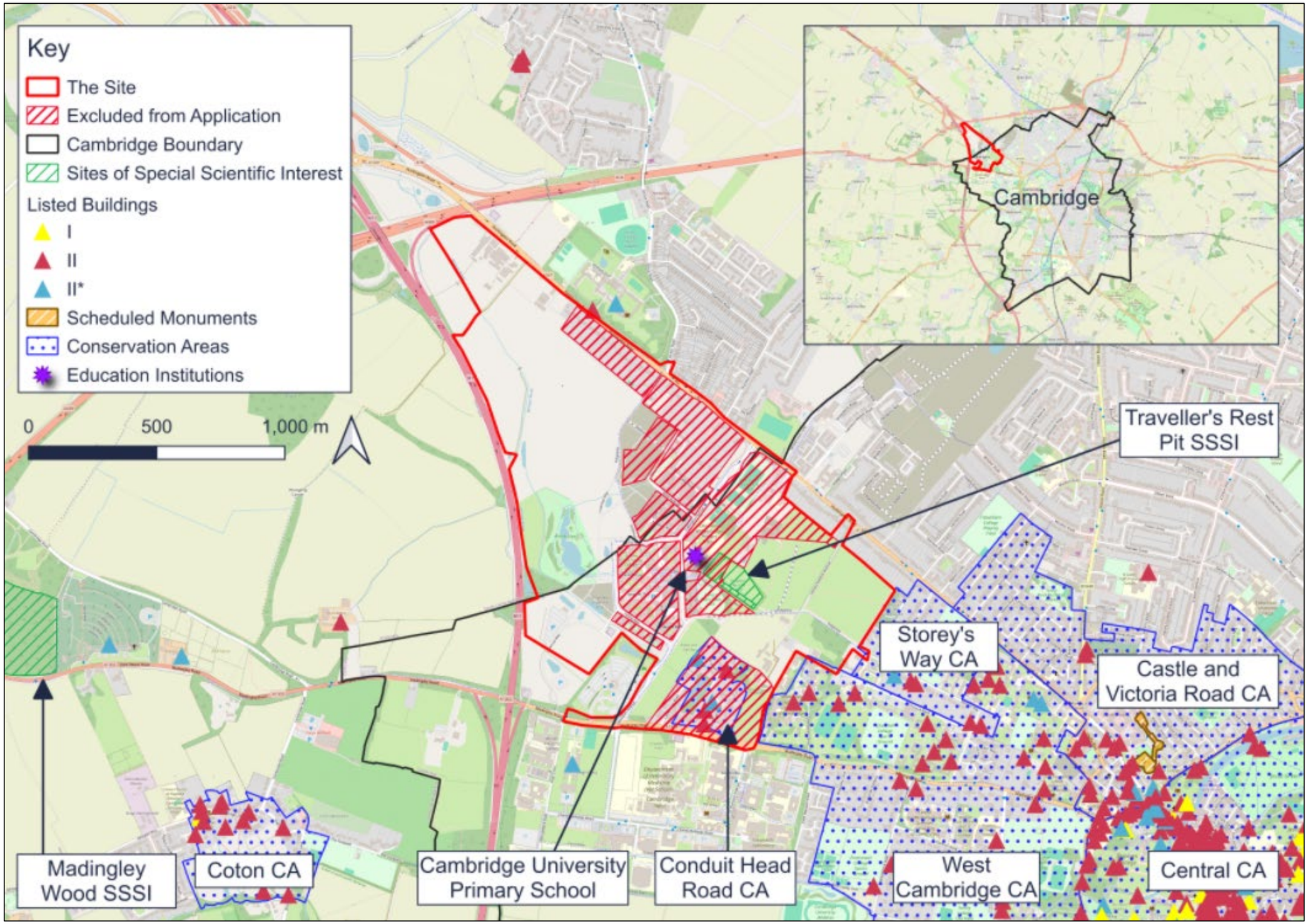
3.51 Huntingdon Road GP surgery is located approximately 750m east of the Proposed Development (from the closest boundary) and is currently accepting new patients who live within the practice area.

3.52 There are two existing publicly available fields near the site, with a further one located within 800m of the site. There are two playspaces near the site, as well as an additional six within 800m of the site, as well as one community garden, Girton Allotments, within 800m of the site.

3.53 Storey's Field Centre is a community centre located within Phase 1 of the 2013 OPP. The facility offers a main hall with 180 seats, other spaces available include a studio and meeting room.

[3] https://geologyviewer.bgs.ac.uk

Figure 3.4 Environmental Site Context



ALTERNATIVES ANALYSIS

3.54 The following sections review the alternatives to the Proposed Development that has been considered by the Applicant including:

- The Do-Nothing / No Development Alternative;
- Alternative Sites; and
- Alternative Designs.

Do Nothing / No Development Alternative

3.55 The Do-Nothing / No Development Alternative refers to the option of leaving the site in its current state. The option of Do-Nothing / No Development alternative has not been considered as the site offers an opportunity to bring forward the future phases of the North West Cambridge Masterplan.

3.56 The site forms part of the wider North West Cambridge Development Masterplan redevelopment consented in 2013 (Planning References: 11/1114/OUT / S/1886/11 / s73 Permissions: 13/1402/S73 / S/2036/13/VC), the 2013 OPP. A portion of the 2013 OPP, known as 'Phase 1', has been built out, with a number of other Phase 1 plots currently under construction.

3.57 The site is also designated as a Major Development site within the Cambridge Local Plan and the South Cambridgeshire Local Plan, and is allocated as a Major Development site within the North West Cambridge Area Action Plan.

3.58 Leaving the site in its current state will result in missed opportunities to support the North West Cambridge Development Masterplan resulting in the loss of the following positive aspects the Proposed Development will bring forward:

- Delivery of up to 3,800 new residential units, up to 1,800 student accommodation / co-living units and up to 6,500m^2 Gross External Area (GEA) of senior living, therefore reducing demand on the wider housing market;
- Delivery of up to 100,000m^2 GEA of flexible academic and employment generating floorspace;
- Provision of up to 3,500m^2 GEA of supporting, town centre uses, likely to comprise retail, nursery, health, indoor sports and recreation uses; and
- Provision of extensive public open space, including children playspace, sports pitches, allotments and a sustainable urban drainage network.

3.59 Development of this nature will facilitate housing provision, new employment opportunities and other direct and indirect socio-economic benefits, such as employment opportunities and increased worker expenditure (refer to **ES Volume 1, Chapter 6: Socio-Economics** for further details), as well as providing a new transport corridor through the site (Cartwright Avenue), with pedestrian and cycle access, and the provision high-quality public realm and landscaping.

3.60 The Proposed Development will contribute to meeting the long-term housing, academic and employment needs of the UoC, with 50% of the proposed housing to meet the needs of UoC key workers

3.61 Under a Do-Nothing scenario the benefits associated with the Proposed Development would not be realised and therefore the Do-Nothing Alternative has not been considered further

Alternative Sites

3.62 No alternative sites or locations have been considered for the Proposed Development. The Applicant owns the site which is designated as a Major Development site in the CCC Local Plan and the SCDC Local Plan for redevelopment.

3.63 The site is deemed a suitable location for the redevelopment of a residential-led, mixed use scheme and has an existing consent with Phase 1 of the 2013 OPP being built out (although the opportunity to submit further applications for Reserved Matters approvals for residential uses has expired under the 2013 OPP). The site is therefore considered to be suitable for the Proposed Development; consideration of alternatives sites has not been considered further.

Alternative Designs

3.64 No reasonable or largely different alternative schemes or designs (as a whole for the site) were identified by the Applicant and the Applicant's design team which would warrant a comparison of environmental effects. The design of the Proposed Development was instead progressed based on the principles and masterplan established by the Applicant and the Design Team. Alternative designs for components of the masterplan evolution of the Parameter Plans are described below in further detail.

3.65 The Control Documents (refer to **ES Volume 1, Chapter 2: EIA Methodology and ES Volume 1, Chapter 4: The Proposed Development**) have evolved from the master-planning work completed as part of the design process, over time, in response to more detailed environmental information emerging as part of the Environmental Impact Assessment (EIA) process. The initial environmental baseline surveys, as well a further analysis as part of the EIA process, have led to design evolution in response to environmental considerations. This is discussed throughout this ES chapter, as relevant.

PROJECT VISION AND KEY DESIGN CONSIDERATIONS

Project Vision

3.66 The vision for the Proposed Development comprises;

- **A New Quarter for Cambridge** – The Proposed Development will create a new quarter for the UoC, which will contribute to meeting the needs of the wider city community, and which will embody best practice in environmental sustainability;
- **Housing for the University and the City** – Eddington is the University of Cambridge's response to the need to provide affordable housing for staff so it can attract and retain top talent to retain its global competitiveness. By housing UoC staff in a purpose- built, high-quality neighbourhood, it will also reduce the demand on the wider housing market in the city; and
- **Open to All** – Eddington is open to all. The UoC's investment in the community is evident in the school, nursery, post-doc centre, hotel, supermarket, community centre, sports facilities and parklands as well as homes delivered in Phase 1. Eddington is an open part of the city with cycleways, footpaths, roads and public transport routes that connect Eddington with the city and key locations including Cambridge West.

Design Considerations

3.67 The design of the Proposed Development has evolved in response to the site and surrounding environmental context. The key considerations during the design evolution of the scheme are presented below and include:

- Phase 1 of the 2013 OPP and the opportunity to create an enhanced, cohesive masterplan which meets the needs of the wider community;
- Opportunity for the creation of new housing, including affordable housing for UoC key workers,
- Proximity to the M11, which presents an existing source of road traffic noise;
- Existing topography across the site;
- Existing ecological considerations, including the Washpit Brook, lagoons, Traveller's Rest Pit SSSI and existing woodlands, with associated no development zone buffers around these features;
- Opportunities for enhancements to existing woodland and hedgerows;

- Proximity to built heritage assets, including Storey's Way Conservation Area and Conduit Head Road Conservation Area;
- Existing routes through the site and the aim to improve connectivity within the site and wider area; and
- Existing residential receptors located to the east and north of the site.

CONSULTATION

Statutory Stakeholder Consultation

3.68 Extensive consultation with officers at the GCSPS has been undertaken for the Proposed Development, with multiple pre-application meetings and consultation occasions. In addition, consultations have taken place with a Quality Review Panel. As part of this consultation process the Proposed Development has evolved.

3.69 The consultation programme has included the following Planning Performance Agreement (PPA) meetings:

- **September 2024 – PPA Introductions**: an introductory session to reflect on key lessons learnt from the 2013 OPP, Phase 1 and early masterplan testing (which proposed the northward realignment of Cartwright Avenue), alongside defining the vision for the Proposed Development;
- **October 2024 – Spatial Layout and Key Approaches**: the Design Team presented the emerging vision for the site, including initial landscaping and movement strategies. This provided supportive feedback from officers for the high-level vision of the Proposed Development, whilst officers sought further assessment of potential change to the scale and massing approved under the 2013 OPP;
- **December 2024 – Neighbourhoods**: the Design Team presented the next iteration of the masterplan, with discussion revolving around early approaches to massing and principles of emerging neighbourhoods. The realignment of Cartwright Avenue, which is detailed the '*Movement and Access*' section of this ES chapter, was presented. Officers requested further detail on unit numbers and the proposed mix of housing, and requested that key views be tested to refine the massing strategy, following which the Design Team engaged with the appointed Landscape and Visual Impact Assessment (LVIA) consultant. Officers also advised on the need to connect the northern area of the site to the wider masterplan;
- **February 2025 – Streetscape and Massing**: the Design Team discussed streetscape principles and the approach to parking within a typical neighbourhood. Officers requested more detail on parking options and alternative typologies proposed. A number of housing typologies were presented and officers proposed initial drafts of parameter plans and codes be produced to test how the principles of the Shared Gardens (discussed within the '*Landscaping'* section of this ES chapter), will be realised;
- **March 2025 – Densities**: whilst overall principles of density and massing presented by the Design Team were supported, officers sought further analysis of the agreed LVIA views against the 2013 OPP masterplan, to enable comparison of envelopes. Officers requested that the northern plots be further tested and explored to provide a positive relationship with the rest of the masterplan;
- **March 2025 – Northern Plots and Design Evolution**: the Design Team established a street-based approach to layout and massing for the northern plots. The eastern plots design development was also presented, alongside an initial draft of parameter plans and example design codes. Officers requested more details on how the scheme would maintain its quality and ambition as set out in Phase 1;
- **May 2025 – Landscape: Amenity and Sport:** the Design Team presented the site wide landscape strategy including trees, hard and soft landscaping, open spaces and public realm. Officers provided positive feedback relating to the integration of the landscape to the built form. The landscape officer raised the need to ensure tree planting locations are informed by the LVIA process;
- **May 2025 – LVIA Views**: the Design Team presented key views that will feature in the LVIA. It was clarified that the 2013 maximum parameters were not inclusive of plant and parapets, so the 2013 OPP will appear lower overall in comparison to the Proposed Development;
- **May 2025 – Parameter Plans**: Officers were supportive of the initial Draft Parameter Plans presented by the Design Team. Discussion over the open space between development plots were discussed, which now take the form of Shared Gardens. The maximum heights plan was clarified as to include storey heights in order to limit height where level changes provide more flexibility in a fixed AOD. Officers requested to see Design Codes to enable them to see if there were any outstanding areas that needed description within the Parameter Plans and Codes.;
- **June 2025 – Northern Quarter**: the Design Team presented revised illustrative proposal for the northern quarter. Officers provided positive feedback and discussions were held over how the Design Code will aid in securing the design for this area; and
- **June 2025 – Design Codes:** officers provided comments on the draft Design Codes prepared by the Design Team, in the form of a comments tracker. This was subsequently used by the Design Team to refine and update the Design Code, to provide more context for future designers.

Quality Review Panel Consultation

3.70 Two Quality Review Panels (QRP) were undertaken. Consultation involved the following:

- **QRP 1: November 2024:** panel feedback included advice on street widths, overlooking, wind tunnels and noise mitigation from the M11, drawing on advice from other similar developments to the Proposed Development. Other suggestions included a mixture of family homes, prioritising individual front doors and having parking located away from homes. Engagement with the community through community events was suggested in order to gauge what the preferences of the community in relation to green space design; and
- **QRP 2: April 2025**: the panel suggested reviewing the 'hubs', suggesting that the Common could require activation through the use of social programming. The panel suggested the amount of parking be reduced, and queried the amount of hardscaping proposed. The Panel highlighted that learning from Phase 1 was important for sustainability and climate resilient proposals of future homes. More explanation as to why the water and district heating systems were changing for the Proposed Development in relation to Phase 1 was suggested. The QRP also drew attention to the role of mobility hubs in creating more of a sense of place for Cartwright Avenue.

Public Consultation

3.71 In addition to the statutory consultation, the Applicant has recognised the need to engage with the public and stakeholders on the emerging and evolving design of the Proposed Development and consider received feedback. Three formal rounds of public consultation were undertaken in / throughout September 2024, November – December 2024, and March – April 2025. Each round of consultation included in-person drop-ins in both Eddington and central Cambridge and an online webinar, to allow for access for as many people as possible.

3.72 Listed below are the main public consultation initiatives and activities put in place throughout the consultation process:

- **Press Release** – a press release announcing each round of consultation was issued to local news outlets. The release detailed location and timings for each consultation event and encouraged local residents to attend the consultation and give their feedback on the presented proposals;
- **Consultation Leaflets** – across each round of consultation, the Applicant was committed to ensuring that the consultation events were promoted as widely as possible. Two weeks ahead of each round of consultation, approximately 8,100 leaflets promoting the corresponding events were circulated to those properties – both commercial and residential – closest to the site. The distributed leaflets included details of the events and encouraged members of the local community to attend a consultation session in order to give their views on or find out more about the Proposed Development;
- **Stakeholder letters –** alongside leaflet circulation, the Applicant prepared stakeholder letters for each round of consultation. These letters invited identified stakeholders to each round of consultation, detailing dates, times and channels through which to get in contact with the project team. Letters also offered briefings to local and political stakeholders;

- **Social Media Adverts –** at each stage of consultation, the Applicant utilised social media advertisements to promote the associated events and maximise engagement with the local community, especially those in a younger demographic more likely to be users of social media platforms;
- **Internal University Promotion:** the Applicant utilised internal channels to promote consultation events. This included a piece promoting dates, times and locations within the UoC newsletter, The Reporter, and on internal platforms;
- **The Eddington Edition** – since the summer of 2024, the Applicant has produced a quarterly newsletter, the Eddington Edition, to showcase community initiatives, local events and news within Eddington. At each round of consultation, the corresponding upcoming consultation was promoted via the Eddington Edition, including dates, locations and encouragement for readers to attend an in-person or online event and give their thoughts on the proposals; and
- **Advertisements –** in the week before the first consultation event, two newspaper adverts were published in Cambridge News (16th September 2024) and the Cambridge Independent (17th September 2024).

3.73 In addition to the three formal public consultations undertaken, three interactive community events were conducted:

- **Community Event 1:** the first community event took place on the 7th September 2024, which involved a Parkrun coffee morning, in which the project team attended Eddington's Parkrun, with a series of exhibit boards that provided an overview of the North West Cambridge Masterplan project so far, as well as information on the Proposed Development. The event had a total of 155 attendees;
- **Community Event 2:** a second community event took place on the 26th April 2025, consisting of the Eddington Grow Club launch event, which set up a community gardening initiative focused on sustainability and self-sufficiency, with a total of 251 residents in attendance. This enabled the Design Team to understand how the existing community utilises green space and their perception of what makes a successful green space; and
- **Community Event 3**: a third community event took place between March and April 2025, and consisted of five in-person drop-ins in Eddington and at venues across wider Cambridge, and an online webinar hosted on Zoom.

3.74 Throughout the consultation process, the Applicant also engaged with a wide range of local resident and community groups. Ongoing meetings were held with some groups to discuss issues that affect Eddington and the wider area, and to also keep groups updated on the latest proposals. The following groups have been consulted with as part of this process:

- North West and West Cambridge Community Forum;
- Cambridge Past, Present and Future;
- Windsor Road Residents' Association;
- Eddington Residents' Association;
- Huntingdon Road West Residents' Association;
- Storey's Way Residents' Association;
- Nineteen Acre Field Residents' Association;
- Parish of the Ascension;
- Girton Baptist Church; and
- Great St. Mary's.

3.75 More details on the consultation undertaken during the design evolution process for the Proposed Development have been provided in the Design and Access Statement (DAS) and the Statement of Community Involvement (SCI), submitted alongside the Planning Application.

3.76 The key themes identified during the consultation which have been incorporated into the design of the Proposed Development include those presented below:

- Green Space – residents frequently emphasised the importance of preserving green spaces and supporting nature. The Proposed Development has been designed with a landscape led approach, with the area to the west of the site (Brook Leys) being retained for open space, and the provision of Shared Gardens and community spaces;
- Safety and Traffic – during public consultation, residents raised concerns over safety and traffic management. The Proposed Development proposes new pedestrian and cycle routes, therefore creating more active travel routes and reducing motor traffic. The proposed Cartwright Avenue includes traffic calming measures to ensure pedestrian safety; and
- Local Services – residents requested the provision of local services, e.g. pharmacy, dentist, GP and leisure outlets, to accommodate the increased population on site. The Proposed Development includes the provision of community facilities, including up to 3,500m^2 of supporting retail, health, nursery, indoor sports and recreation uses.

DESIGN EVOLUTION

3.77 The following sub-sections of this ES chapter describe the design evolution processes undertaken by the Applicant's Design Team and is structured around the design brief, the key design changes, pre-application consultation meetings and public consultation meetings that have led to the final design of the Proposed Development.

3.78 The design of the Proposed Development has evolved in response to extensive community and stakeholder engagement and input in relation to the technical and environmental design aspects. The EIA Team has worked alongside the Design Team to ensure that 'mitigation by design' principles have been incorporated into the evolving scheme, and so the evolution of the design has included, where relevant, consideration of environmental effects and issues. This has been discussed within this section as relevant.

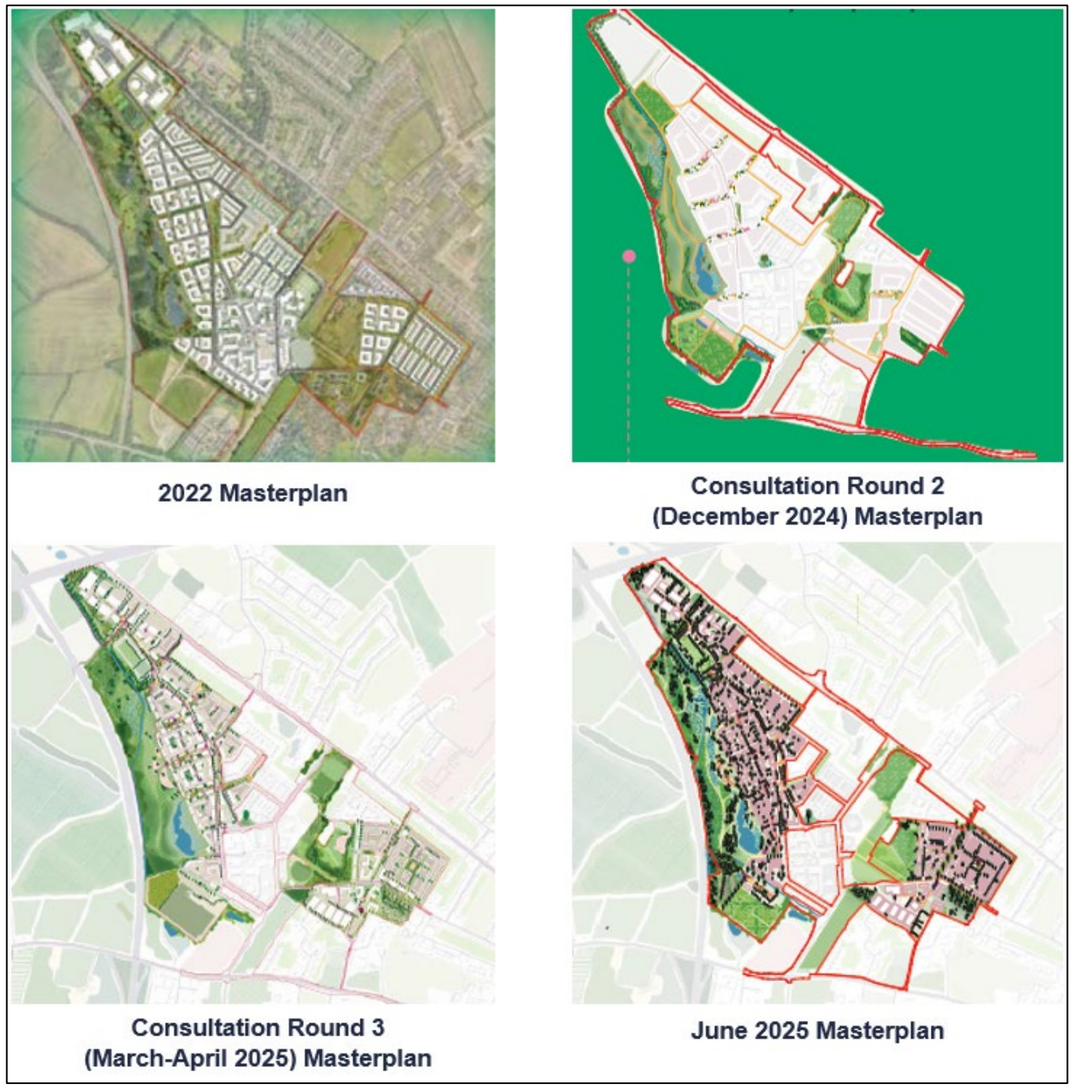
3.79 The Proposed Development employs a parameter-based approach in its outline application. This method establishes clear boundaries for maximum development while allowing future RMAs to refine details in alignment with the design objectives and the Design Code.

Masterplan Evolution

3.80 The Design Team carried out initial consultation work on the proposed masterplan with GCSPS through a series of PPA meetings, as described in the '*Consultation'* section of this ES chapter.

3.81 Figure 3.5 illustrates the evolution of the masterplan, from the 2022 testing of the Masterplan, in which a northward realignment of the proposed Cartwright Avenue was put forward, spanning across the various rounds of consultation detailed above, through to the Illustrative Masterplan depicted in Figure 3.11.

Figure 3.5 Illustrative Masterplan Evolution: 2022-2025



Site Layout and Land Use

3.82 The site layout and land use has been a key driver to ensuring the site aligns with the wider environmental context, the following concepts have been incorporated into the site layout and land use:

- Commercial uses have been located towards the northern portion of the site, ensuring that commercial building types does not negatively impact the quieter quality of residential receptors located beyond the southern and eastern portions of the site;
- Maintaining of the western extent of the site (Brook Leys) as various forms of open and amenity space, ensuring sufficient distance of residential land uses from the M11;
- Student accommodation was relocated from the centre of the site to the east of the site, alongside the proposed academic uses, therefore creating an academic cluster, while residential dwellings are located within the centre of the site;
- Land facing Huntingdon Road (A1307), south of the Huntingdon Road junction, evolved from commercial use to mixed use, including residential uses;
- Senior living located closer to local centre and activity hubs to ensure safe and short commute times for future residents (shown as '1' in Figure 3.7);
- Location of supporting retail, nursery, health and indoor sports uses in a series of hubs across the site, to complement the provision of the local centre as delivered within Phase 1;
- Inclusion of a 10m buffer around the Traveller's Rest Pit SSSI to avoid any impacts from the Proposed Development;
- Along the site perimeter, a 20m buffer no-build zone was incorporated from existing private garden boundaries, in order to reduce overlooking and minimise the impact of the Proposed Development on residential receptors along Huntingdon Road (A1307) and Storey's Way (shown as '2' and '3' in Figure 3.7); and
- Development plots were broken up to provide breaks between the buildings, in order to reduce the visual impact of the Proposed Development on the existing landscape (shown as '4' in Figure 3.7).

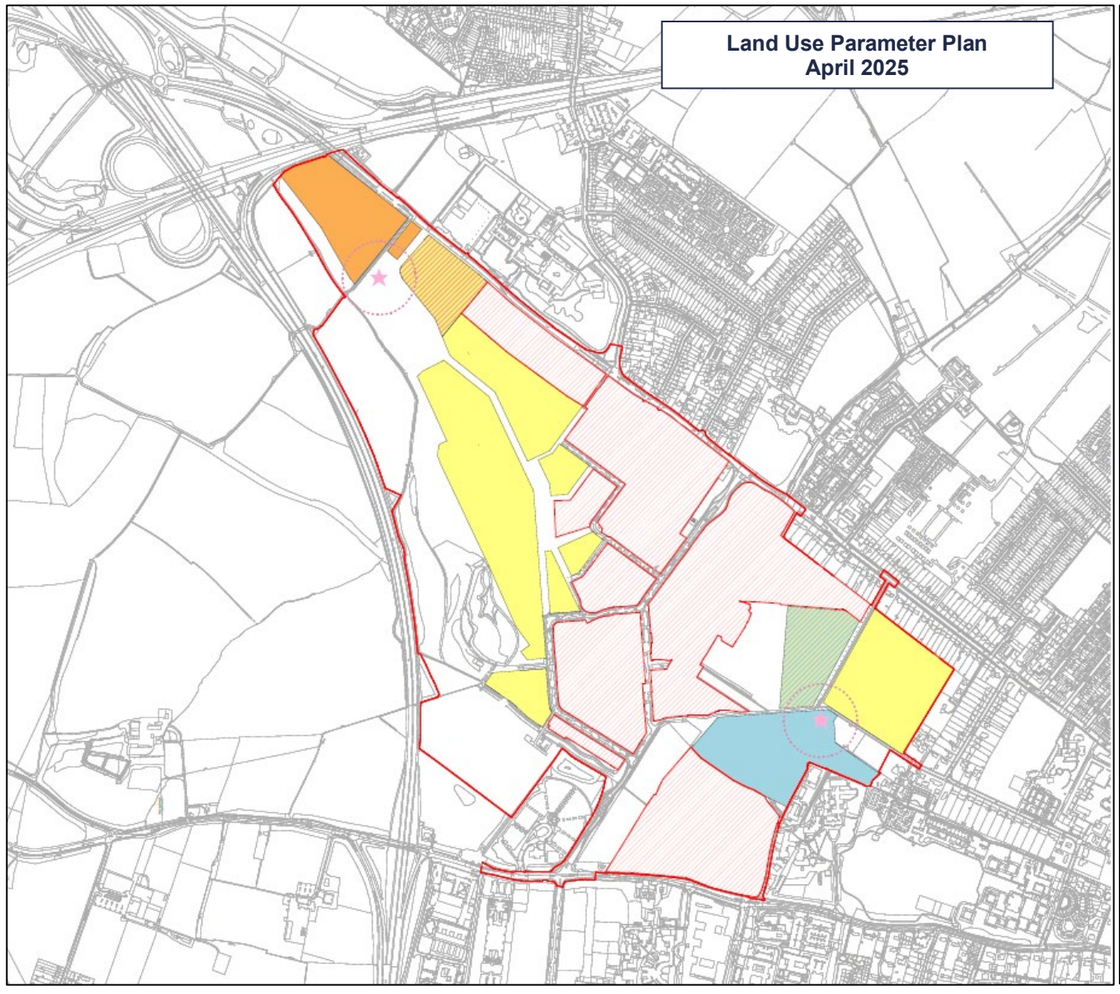
3.83 Figure 3.6 depicts the evolution of the design from the original 2013 OPP (left) to the how the site evolved throughout 2024 to 2025 (right).

3.84 As shown in Figure 3.6, the 2013 OPP proposed academic / commercial uses within the centre of the site, amongst the residential uses. However, as described above, the Proposed Development has relocated commercial uses to north of the site, and academic uses to the south-east, to form commercial hubs, and minimise the impacts of non-residential uses on future residential amenity. Furthermore, a plot in the northern section of the site which was previously marked for development in the 2013 OPP has been allocated for amenity uses within the Proposed Development.

Figure 3.6 Land Use Distribution Principles (2013 OPP vs Proposed Development)



Figure 3.7 Evolution of Land Use Parameter Plan



For Context

Site application boundary

Excluded from application

For Approval

Living Uses, comprising residential floorspace (Class C3/C4), Cc-living (Sui Generis).

Living Uses, comprising residential floorspace (Class C3/C4), Cc-living (Sui Generis), student accommodation (Sui Generis) and Senior Living (Class C2).

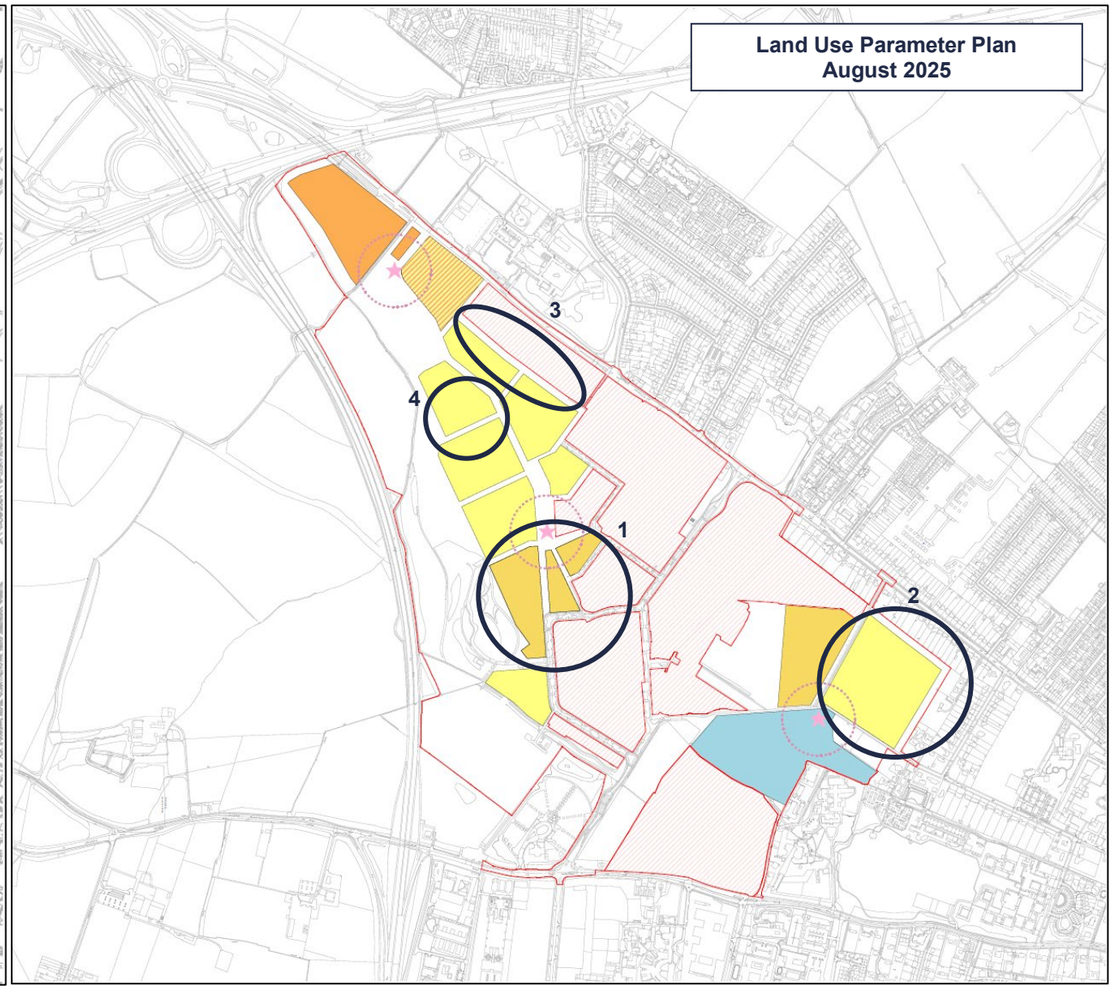
Living Uses, comprising residential floorspace (Class C3/C4), Cc-living (Sui Generis) and Senior Living (Class C2). Flexible Employment Floorspace (Class E(g) / Sui Generis research uses.

Academic Floorspace (Class F1), student accommodation (Sui Generis), Cc-living (Sui Generis).

Student accommodation (Sui Generis). Living Uses, comprising residential floorspace (Class C3/C4), Senior Living (Class C2) and Co-living (Sui Generis)

Flexible Employment Floorspace (Class E(g) / Sui Generis research uses.

Indicative location for floorspace for supporting for ancillary uses that could include retail, nursery, health and indoor sports and recreation uses (Class E (a) – E (f)) - with zone of influence. To be associated with residential uses that require additional social support. i.e. student accommodation or student living.



For Context

Site application boundary

Excluded from application

For Approval

Building Development Zones:

Living Uses, enabling residential floorspace (Class C3/C4), Cc-living (Sui Generis).

Living Uses, enabling residential floorspace (Class C3/C4), Cc-living (Sui Generis), student accommodation (Sui Generis) and Senior Living (Class C2).

Living Uses, enabling residential floorspace (Class C3/C4), Cc-living (Sui Generis) and Senior Living (Class C2). Flexible Employment Floorspace (Class E(g) / Sui Generis research uses.

Academic Floorspace (Class F1), student accommodation (Sui Generis), Cc-living (Sui Generis).

Flexible Employment Floorspace (Class E(g) / Sui Generis research uses).

Indicative locations for retail, nursery, health, indoor sports and recreation uses (Class E(a) - (f)), such uses being permitted in all of the above areas.

Massing and Building Heights

3.85 The massing strategy has evolved from the original 2013 OPP to provide less granularity in the massing, for a longer life-span of the masterplan and to reduce the massing towards the edges of the site. The location of the taller elements within Proposed Development has been strategically investigated to create an articulated skyline and varied townscape. The massing along Huntingdon Road junction has increased to allow commercial use to be accommodated in this area.

3.86 Further to above, a key aspect of the evolution from 2013 OPP was providing the flatted accommodation between four and six storeys as this is the optimum envelope in terms of carbon saving. In terms of variation, houses have been introduced at two to three storeys as well as higher buildings have been introduced to widen the spectrum. These taller elements are located at the centre of the site to:

- Introduce a sense of layering in the massing;
- Further articulate the skyline and lower the potential impact on views
- Assist with the legibility of the massing and navigation through the site as they are located along the main movement line and a main public realm area directly linked to the local centre.

3.87 In response to the consultation undertaken throughout 2024 and 2025, the massing evolved to focus on the frontage along Brook Leys (western portion of the site). The location of taller elements, originally located along the Shared Gardens, was moved to the centre of the site, with a step down in massing towards the site edges and the existing properties along the eastern and southern boundaries of the site. The reduction of proposed heights along the Shared Gardens also decreased overshadowing on the proposed green spaces.

3.88 Furthermore, the building heights of the Proposed Development have evolved to respond to the existing built heritage context. The location of taller elements within the centre of the site means that buildings of a larger scale are located a considerable distance from built heritage receptors, therefore minimising the impact of the Proposed Development on their setting. The Shared Gardens between development plots were introduced to allow for breaks in the massing, improving visibility through the site and reducing the Proposed Development's visual impact on the existing landscape.

3.89 During the iterative design process, the massing of the Proposed Development has also evolved in response to landscape / townscape and visual analysis findings as well as stakeholder comments. In particular, the following measures have been incorporated into the design:

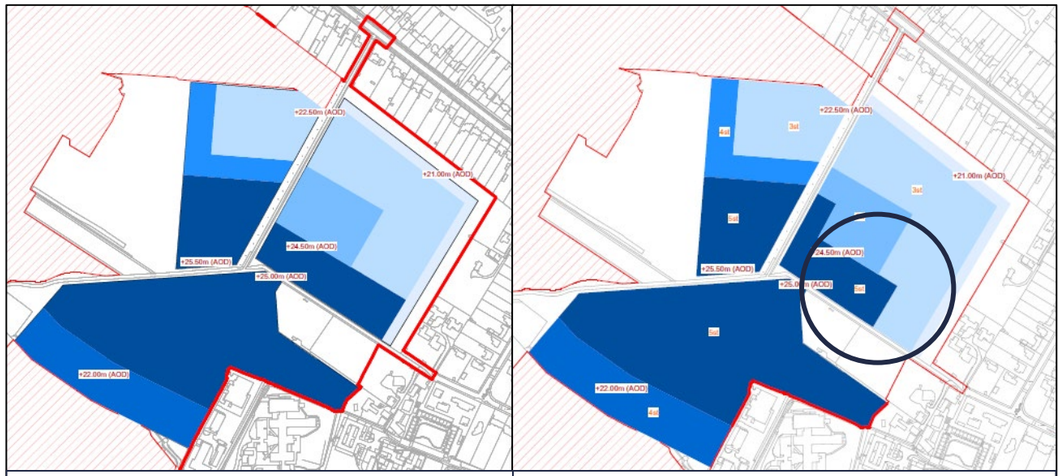
- Skyline articulation: utilise localised changes in height to create an articulated skyline and avoid a flat roofscape;
- Built Form: variation in scale, height and materiality to create a dynamic rhythm in the built form along the western edge of the site, Brook Leys, and the green corridors across the site. The definition of different height zones also reflects the relationship with the various boundary conditions: the height increases towards the existing Phase 1 development, while the proposed height diminishes towards the residential areas along Huntingdon Road (A1307) and the western countryside edge; and
- Gateway Character: to ensure that the western development edge results in a positive gateway feature with the use of an appropriate variation of scale, colour and material palette to avoid a monotonous built edge and create visual interest within townscape coherence.

3.90 As shown in Figure 3.8 the heights of the buildings to the east of the site were set back from the boundary edge, in order to provide a buffer to the residential properties to the east. This reduces the visual impact of the Proposed Development, as lower buildings are viewed from nearby receptors, and are thus less imposing on the landscape.

3.91 Proposed heights have also evolved in response to the existing topography, utilising the site level changes to provide a sense of layering across the site. As per the 2013 OPP, the massing increases towards the proposed Cartwright Avenue to aid with wayfinding and legibility.

3.92 The overall heights of the Proposed Development have also been influenced by the consideration of the carbon footprint. Residential construction is the largest source of embodied carbon on-site, and the improvement to form factor can aid in the reduction of embodied carbon. Increasing heights from four to six storeys can lead to a 4% improvement in embodied carbon. Proposed apartment buildings heights have been optimised between five to six storeys, with opportunities for seven to eight storey buildings at the centre of the site, therefore reducing embodied carbon.

Figure 3.8 Evolution of Building Heights Parameter Plan (Eastern Section of the Site)



Building Heights Parameter Plan April 2025	Building Heights Parameter Plan August 2025

Landscaping

3.93 The landscaping and open space strategy for the Proposed Development has evolved in response to the existing Phase 1 landscape, to create a cohesive and continuous landscape. The Proposed Development provides a network of green infrastructure formed from existing vegetation, new planting, established habitat and new wildlife corridors. Existing hedgerows, trees and woodland (Storey's Way Wood, Cricket Pitch Wood and Pheasant Plantation) have been retained and incorporated into the proposed green infrastructure, with additional woodland planting and buffer zones to woodland zone included to minimise the impact of the Proposed Development on these habitats.

3.94 A number of trees on site have Tree Preservation Orders (TPOs), all of which are proposed for retention (as shown in Figure 3.10). The existing trees to the east of the site are also proposed to be retained to contribute to the setting of the Storey's Way Conservation Area; minimising the Proposed Development's impact on its setting. Street trees and mature planting are an integral part of Storey's Way Conservation Area heritage setting, therefore the Proposed Development landscaping has incorporated street planting, responding to the character of the adjacent heritage asset.

3.95 Brook Leys, which is designated as Green Belt, has been retained to provide a meaningful break in the built form along the western edge, as well as multifunctional green spaces and connectivity across the Proposed Development to the countryside. This retained green space defines the transition between the city and countryside, providing a clear frontage.

3.96 The Design Team also worked closely with the project ecologist to enhance the biodiversity across the site. A mixture of native and non-native species, suitable for ground and microclimatic conditions are proposed within the planting strategy, which provide a variety of valuable functions including shade, shelter, cooling, bringing productive and biodiversity value.

3.97 The design of the public realm has also been informed by the existing topography of the site. The site naturally falls from east to west, towards the Washpit Brook, therefore the proposed landscaping has been designed to accommodate these level changes to ensure an inclusive and accessible public realm. Furthermore, by working with the existing topography, this minimises the movement of earthworks and enables re-use of site won materials throughout the Proposed Development and retains the natural lie of the land.

3.98 The 2013 OPP featured 'Green Fingers', which were devised as formal linear corridors, which included vehicular and access movement alongside SuDS and biodiversity. The Proposed Development instead features Shared Gardens, which removes vehicular access, creating safer spaces for children, as well as increasing space used for community activities. The Shared Gardens also include SuDS, biodiversity and active travel routes.

3.99 Figure 3.9 depicts these changes from the 2013 OPP to the Proposed Development, noting that the Shared Gardens within the Proposed Development build upon the Green Fingers established in the 2013 OPP.

3.100 The design of the lighting strategy within the landscape and public realm has also been designed to consider the existing ecological habitats and species on site. For example the following measures have been incorporated into the proposed lighting design:

- No lighting along Washpit Brook, within the riparian zone or to the west of the brook;
- No lighting on the edge of Pheasant Plantation, to minimise light spill to the existing woodland;
- Positioning of light columns along Garrod Street away from Cricket Pitch Wood which will be shielded to minimise rearwards light spill. Lower columns at greater intervals have also been proposed for this location; and
- The cycleway along the northern edge of Storey's Way Wood will be lit using low level bollard lighting to minimise light spill onto the woodland edge, and avoid light spill onto trees at heights where bat roosts may be present.

3.101 As a result of the above measures, a dark corridor for nocturnal wildlife, including bats, will be retained across the site.

3.102 The illustrative tree planting strategy has been developed with consideration of the following principles:

- Existing tree canopy cover to be retained and strengthened;
- A hierarchy of tree types to form a strong and coherent canopy structure to the masterplan layout;
- Diversity of species for habitat creation amenity, shade and shelter, framing and filtering views;
- Species selection and placement to consider scale and form, seasonal interest, climate resilience, ground conditions, microclimate, wildlife value and productivity, sense of place;
- Inclusion of forest scale trees in appropriately scaled spaces, for long-term large scale canopy height capable of competing with built form massing.

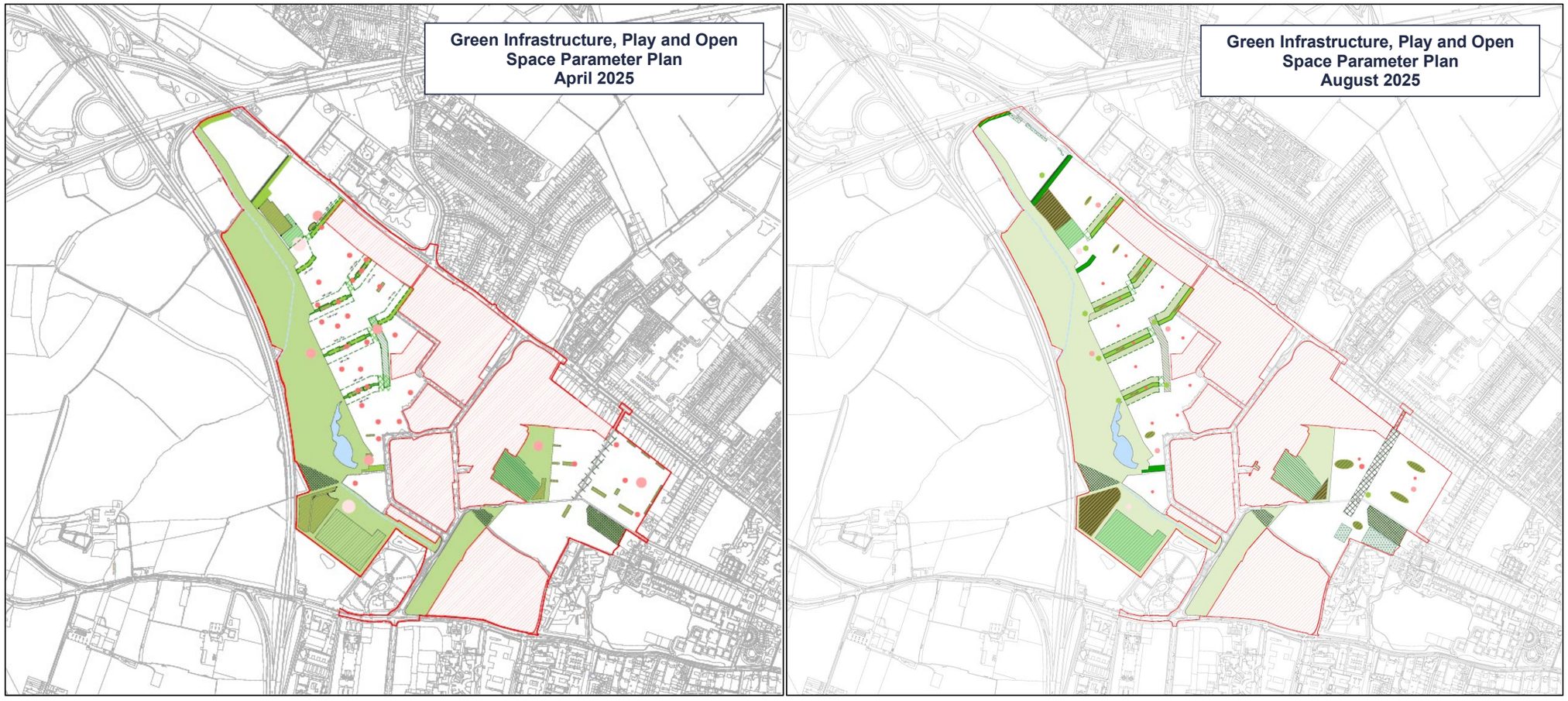
3.103 Figure 3.9 shows the evolution of the Green Infrastructure, Play and Open Space Parameter Plan, which was developed through consultation with the ecology consultants, cultural heritage consultants, landscape architects and master planning teams.

3.104 Figure 3.9 shows the initial Green Infrastructure, Play and Open Space Parameter Plan considered for the site (left). The drawings demonstrate the strong intention to emphasise green infrastructure throughout the site, with extensive areas of public open space, planting and retention of ecological habitats, including hedgerows and woodland. Figure 3.13 also shows a more refined iteration of the Green Infrastructure Parameter Plan, Play and Open Space (right), showing the existing landscape features to be retained and enhanced.

Figure 3.9 Green Infrastructure Changes vs 2013 OPP



Figure 3.10 Evolution of the Green Infrastructure, Play and Open Space Parameter Plan



For Context

- Existing retained Hedgerow
- Existing Chestnut Avenue (TPO tree line)
- Greenbelt (primary infrastructure)
- Existing Watercourse
- Traveller's Rest Pit SSSI
- Existing woodland

For Approval

- Mimimum extents for informal public open space
- Indicative location of informal public open space zones
- +/- xm Limit of deviation
- Pedestrian crossing and below ground swale
- Public open space
- Allotments and growing space
- Indicative location of LAP
- Indicative location of LEAP
- Indicative location of NEAP
- Sports

For Context

- Existing retained Hedgerow
- Existing Chestnut Avenue (TPO tree line)
- Existing Traveller's Rest Pit SSSI
- Existing woodland
- Existing landscape feature to be retained, enhanced and extended
- Existing Watercourse
- Informal open space on Greenbelt (primary infrastructure)

For Approval

- Fixed location of public open space
- Fixed location of public open space that requires planting
- Public open space
- Fixed location for public open space within building development zones (Shared Gardens)
- Variable location for public open space within building development zones. The width of open space within development must range between 15 and 30 metres. Please refer to The Shared Gardens section of the Places chapter of the Design Codes for details on layout.
- Zone for pedestrian crossing
- Community growing space
- Allotments
- Indicative location of LAP (in some instances more than one LAP will be required. Refer to Design Codes for further information).
- Indicative location of LEAP
- Indicative location of NEAP
- Formal sports
- Location of proposed, indicative townscape significance in the form of landscape

Illustrative Masterplan Evolution

3.105 Figure 3.11 illustrates the final Illustrative Masterplan, as evolved from 2022, spanning across the various rounds of consultation detailed above (Figure 3.5). Details of the evolution of specific elements of the Illustrative Masterplan are described in the following sections.

Figure 3.11 Illustrative Masterplan



Movement, Access and Parking

3.106 The original 2013 OPP proposed Cartwright Avenue to form part of the primary radial route through the west of the masterplan, linking between the Huntingdon Road West Junction and Turing Way. The Proposed Development has realigned Cartwright Avenue compared to 2013 OPP to work better with existing topography. Cartwright Avenue has also been narrowed compared to the 2013 OPP, which was welcomed during the pre-application consultation with GCSPS.

3.107 The movement and access strategy of the Illustrative Masterplan has been designed to make active travel the easiest and most convenient mode of transport. The creation of amenity loops has helped to establish connectivity throughout the Proposed Development. These amenity loops also connect to the sport facilities provided within the Proposed Development. The road network has been limited to encourage active travel, with primary routes being accessible to pedestrians and cyclists. Sweeping routes along Shared Gardens have been designed to lean towards one side to allow more space for communal use.

3.108 As part of the amenity strategy, a 5km and 10km running route looping around the site and through Brook Leys has been developed in response to the existing community's passion for running. Brook Leys of the Proposed Development marks an important space of transition from rural to urban, whilst offering the community the space to interact with nature.

3.109 The location of surface parking has been carefully considered as the Illustrative Masterplan has been developed. Car parking has been distributed throughout the site, with as many spaces as possible located closer to junctions. This will ensure that people will park their vehicles as soon as they drive off main road, therefore reducing traffic on neighbourhood roads and reinforcing their priority for pedestrians.

3.110 During pre-application discussions, different parking level scenarios were considered within the neighbourhoods to demonstrate how these could affect the street scene. Within the Proposed Development, car storage will be clustered in a way that reduces car presence on the street and planted landscape will be used to mitigate the visual impact of car storage on the public realm.

Sports and Recreation

3.111 In response to feedback received as part of the public consultation, in which the local community expressed the desire for sports and recreation uses to be incorporated into the Proposed Development, a variety of sports uses have been included within the Illustrative Masterplan, such as three football pitches and four tennis courts.

3.112 Proposed sports uses were relocated within the masterplan to the south of the site, in response to pre-application consultation feedback, to ensure it is more easily accessible from all activity zones across the Proposed Development. Sports pitches, allotments and playspaces, which provide hubs of activities, have been distributed across the Proposed Development to serve the whole community and ensure residents have equal access.

3.113 Furthermore, the proposed location is a greater distance from residential receptors, therefore minimising any potential noise impacts on nearby sensitive receptors.

Infrastructure and Utilities

3.114 A number of infrastructure elements of the Illustrative Masterplan have been significantly influenced by established and previously consented strategies associated with Phase 1 of the 2013 OPP. Whilst accounting for changes in standards and the current requirements of the Illustrative Masterplan, in terms of development quantum and mix, it has been important to integrate established infrastructure principles into the evolution of the Illustrative Masterplan where appropriate. In some cases this means the infrastructure approach is driven by this and has not therefore needed consideration of a significant number of strategic alternative approaches. In other cases, such as energy, consideration of alternatives and a resulting approach that is different from that proposed in the 2013 OPP.

3.115 A summary of infrastructure influences on Proposed Development is provided below:

- Earthworks: the levels strategy developed as part of the landscape design needed to consider established fixed points (such as road connections) and site topography. From an infrastructure perspective proposed site topography has in turn been informed by the need to optimise bulk earthworks (retaining and integrating existing stockpiled clay materials into the masterplan design) and respecting relevant flood risk and drainage considerations, for example including appropriate attenuation provision. These requirements required an iterative approach in some areas of the Proposed Development, particularly associated with the interface between proposed and existing levels along some parts of Brook Leys;
- Flood Risk and Drainage: there is a consented and implemented flood alleviation scheme for the Washpit Brook accounting for the wider North West Cambridge Masterplan development and an accompanying drainage strategy incorporating surface water attenuation both on plot and along Brook Leys, before

discharging at agreed rates into the Washpit Brook. A swale system was used between attenuation elements. Capture and use of non-potable water was part of the 2013 OPP and on-site storage lagoons have been constructed as part of Phase 1 for non-potable water.

With relevant updated parameters these infrastructure principles have been carried forward and informed the current Proposed Development. Responding to the landscape strategy the Proposed Development uses Shared Gardens as a principle for Sustainable Urban Drainage Systems (SuDS), rather than fully open swales in green fingers, balancing and integrating a number of important masterplan functions. Attenuation requirements (either tanks or detention basins) are an example of where space for infrastructure requirements have been considered in the Proposed Development process.

- Foul Drainage: proposed site topography and the constructed Phase 1 foul drainage network and pumping stations have influenced the foul water drainage strategy for the Proposed Development. Proposed gravity networks convey foul water to low points where pumping stations then pump the sewage through the network and ultimately to Madingley Road trunk sewer. Pumping stations are in locations similar to the previously 2013 OPP and attenuation flows to allow the ultimate discharge point into Madingley Road sewer via the as constructed Phase 1 pumping station to operate at a previously agreed flow rate. This approach aligns with the as constructed networks and stakeholder requirements, also avoiding the need for any new network connections. Site topography drives the location of foul water pumping stations which has been considered from space and access requirement within the design process.
- Energy: responding to technological changes and decarbonisation of electricity supplies, an on plot energy solution of Air Source Heat Pumps is proposed rather than a centralised solution has been proposed for the Proposed Development. This reduces distribution losses and supports flexibility. Relevant spatial considerations associated with the energy strategy have been part of the Illustrative Masterplan development process alongside a mechanism for dealing with overheating risk within the later detailed design stage.

SUMMARY

3.116 This ES chapter has demonstrated that the Proposed Development has been subject to a detailed design evolution process, holistically considering and evaluating environmental constraints and opportunities throughout. Through an extensive consultation process, the Proposed Development has significantly evolved, with the consideration of key environmental effects, including landscape and visual effects, ecology and transport infrastructure, becoming key drivers for the design of the Proposed Development.

Chapter 4: The Proposed Development

TRIUM

INTRODUCTION

4.1 This chapter of the Environmental Statement (ES) presents a description of the Proposed Development sought for approval under the Outline Planning Application (OPA). This ES chapter provides the relevant and sufficient information on the Proposed Development to aid the identification and assessment of potential impacts and likely effects across the technical topic areas addressed in the EIA, as presented in **ES Volume 1, Chapters 6 to 15 and ES Volume 2, Landscape and Visual Impact Assessment** (LVIA).

4.2 Further details on the Proposed Development can be found within the Design and Access Statement (DAS), Parameter Plans, Design Code, Development Specification and the Planning Statement that have been submitted in support of the outline planning application. However, the information presented within this ES chapter is sufficient to understand the site and Proposed Development sought for approval, and the basis of the EIA.

OVERVIEW OF THE PLANNING APPLICATION

4.3 The Proposed Development seeks outline planning permission (all matters reserved except for means of access to the public highway) for a phased mixed-use development, including demolition of existing buildings and structures, such development comprising:

- Living uses, comprising residential (Use Class C3 / C4, up to 3,800 dwellings), student accommodation (Sui Generis), Co-living (Sui Generis) and senior living (Use Class C2);
- Flexible Employment Floorspace (Class E(g) / Sui Generis research uses);
- Academic Floorspace (Use Class F1);
- Supporting retail, nursery, health and indoor sports and recreation uses (Class E (a) – E (f)); and
- Public open space, public realm, sports facilities, amenity space, outdoor play, allotments and hard and soft landscaping works alongside supporting facilities;
- Car and cycle parking, formation of new pedestrian, cyclist and vehicular accesses and means of access and circulation routes within the site;
- Highway works;
- Site clearance, preparation and enabling works;
- Supporting infrastructure, plant, drainage, utility, earthworks and engineering works.

4.4 Detailed planning permission is sought for the primary means of access to the site. The access arrangements which are sought for approval in detail are described further below in '*Means of Access*'.

4.5 As discussed in **ES Volume 1, Chapter 1: Introduction,** and **ES Volume 1, Chapter 2: EIA Methodology** Control Documents are documents and plans which describe the principal components of the Proposed Development, provide parameters that guide future Reserved Matters Applications (RMAs), and act as controls to limit development within the parameters set. These documents create a framework which sets out the information required to allow the impacts of the Proposed Development to be identified and assessed.

4.6 The Control Documents provide a number of development controls, including the maximum building and land use floorspace limits, and a 3-dimensional (3D) building envelope within which the detailed design of buildings can come forward through the submission of RMAs. The range of land use classes and amount of floorspace which could be brought forward (Figure 4.2) has also been specified.

4.7 The OPA comprises the following Control Documents, which in combination with this ES chapter form the basis of assessment for the EIA:

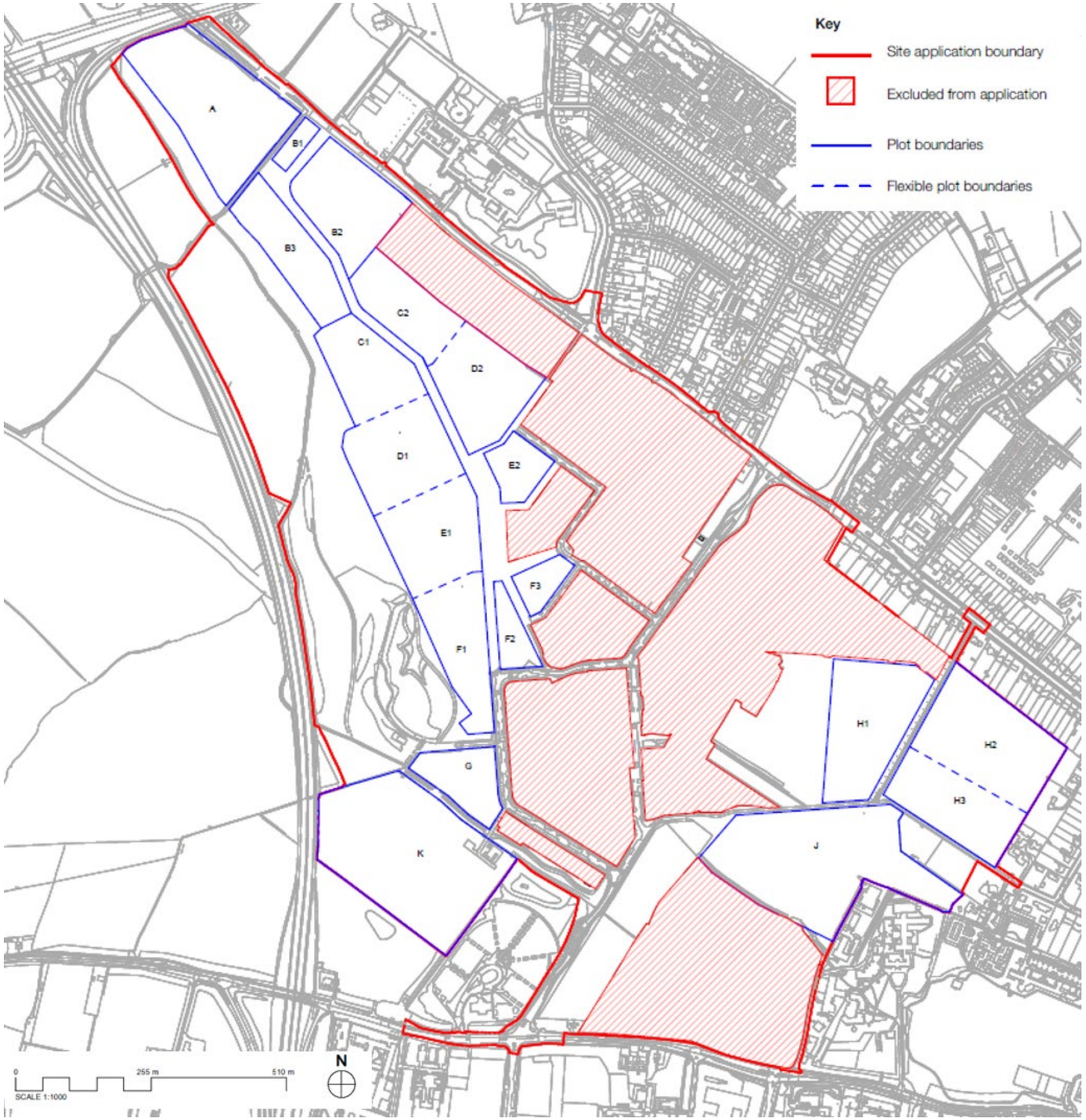
- Parameter Plans:
  - Demolition Plan (PP2-10001);
  - Green Infrastructure, Play and Open Space Parameter Plan (PP3-10002);
  - Access and Movement Parameter Plan (PP4-10003);
  - Land Use Parameter Plan (PP5-10004);
  - Existing Levels Parameter Plan (PP6-10005);
  - Proposed Maximum Heights Parameter Plan (PP7-10006); and
  - Urban Design Parameter Plan (PP8-10007).
- **Design Code** – a document which provides a set of rules and codes which establish the design principles and sets out the way in which future RMAs can be brought forward.; and
- **Development Specification** – a document which defines and describes the principal components of the Proposed Development, including the form and content of the OPA as well as the parameters for future RMAs. The Development Specification outlines the maximum amount of development that could come forward across the site. The Development Specification provides information on the land use class floorspace for each of the use classes which are being sought for approval and could be brought forward across the site.

4.8 The controls in the Parameter Plans primarily deal with 'Access', 'Layout', 'Scale' and 'Use', where the Development Specification relates to 'Amount', and the Design Code relates to all aspects of design, including 'Scale' and 'Appearance'. It is through the Parameter Plans that the Development Zone locations, open space and green infrastructure, and key road, pedestrian and cycle routes are laid out and controlled.

4.9 The Parameter Plans, Design Specification and Design Code submitted as part of the OPA set out the information required to allow the environmental and socio-economic impacts and effects of the Proposed Development to be identified with sufficient certainty at the OPA stage. The assessments contained within **ES Volume 1, Chapters 6 to 15** and in **ES Volume 2, Landscape and Visual Impact** are based on the Proposed Development, as defined and described by the Control Documents.

4.10 An Illustrative Masterplan representing one possible way the principles as defined in the above listed Control Documents could be interpreted/achieved and developed into a design, is also described in the DAS and set out within this ES chapter.

Figure 4.1 Proposed Development Plot Locations (Illustrative)[1]



[1] *This plan is not sought for approval and is purely for illustrative purposes to present site layout.*

DESCRIPTION OF THE PROPOSED DEVELOPMENT

Site Layout and General Arrangement

4.11 The site is roughly triangular in shape and is bound by Huntingdon Road (A3107) to the north and north-east, Madingley Road (A1303) to the south and the M11 motorway to the west.

4.12 The Proposed Development is to be delivered across three key phases. For the purposes of assessment, it is assumed that the Proposed Development will be brought forward as follows:

- Phase 2 – located to the north-west of the site;
- Phase 3 – located in the centre of the site; and
- Phase 4 – located to the east of the site.

4.13 In the Illustrative Masterplan, the Proposed Development is divided into 19 indicative plots, as shown in Figure 4.1.

Amount of Development

4.14 The OPA seeks approval for a maximum amount of development for residential and non-residential uses proposed. The maximum amount of development is secured through the Parameter Plans and via the Development Specification with the design guided by the Design Code submitted for planning approval. This builds in a degree of flexibility for the future detailed design of the Proposed Development within a site wide maximum amount of development.

4.15 The maximum amount of development for each land use proposed is shown in Table 4.1.

4.16 To enable a reasonable assessment across the various technical disciplines considered within this ES, a breakdown of the likely amount of floorspaces that could come forward within this maximum area being applied for have been considered. As discussed in **ES Volume 1, Chapter 2: EIA Methodology**, each technical discipline has individually applied reasonable worst-case assumptions when considering potential effects.

4.17 Figure 4.1 illustrates the indicative land use plot arrangement across the site, which is not sought for approval as part of the OPA and is presented for illustrative purposes only. Figure 4.2 presents the Land Use Parameter Plan, which together with Table 4.1 shows the proposed plots and their respective uses.

Table 4.1 Maximum Development Area

Land Use		Amount (GEA) (m^2)
Residential	Residential (Use Class C3 / C4)	Up to 365,000*
	Student Accommodation (Sui Generis)	Up to 52,000*
	Co-living (Sui Generis)	Up to 52,000*
	Senior Living (Use Class C2)	Up to 6,500
Non-Residential	Flexible Employment Floorspace (Use Class E(g) / Sui Generis)	Up to 40,000
	Academic Floorspace (Use Class F1)	Up to 60,000
	Supporting retail, nursery, health and indoor sports and recreation uses (Use Class E (a) – E (f)).	Up to 3,500
	Ancillary floorspace comprising Back of House, Enclosed Plant, Storage, Servicing, Car and Cycle Parking Areas, development infrastructure required to support the development	No Maximum

** Total maximum floorspace of Residential (Use Class C3 / C4) + Co-living (Sui Generis) + Student Accommodation (Sui Generis) is up to 417,000m^2 GEA.*

Residential Land Uses

4.18 The individual floorspaces set out in Table 4.2 could accommodate up to 3,800 residential dwellings (Use Class C3 / C4), up to 1,800 student accommodation units (Sui Generis) and up to 1,800 co-living units (Sui Generis).

4.19 However, all of these units could not come forward at the same time due to the maximum floorspace amount of 417,000m^2 Gross External Area (GEA) allocated to these uses. Therefore, as described in paragraph 4.16, each technical discipline has considered this and applied worse case assumptions where relevant.

4.20 50% of the residential dwellings (Use Class C3 / C4) will be Key Worker Housing (KWH) for University of Cambridge (UoC) and College staff. The final tenure and number of residential dwellings will be defined and evolve through the future RMA process

4.21 Table 4.2 presents the site wide unit mix ranges for the market housing provision, and Table 4.3 presents the site wide unit mix ranges for the KWH provision.

Table 4.2 Site Wide Unit Mix Ranges – Market Housing

Residential Dwelling Type[2]	Market	
	Minimum	Maximum
Single Person Unit	N/A	7.5%
One Bed Unit	10%	30%
Two Bed Unit	25%	45%
Three Bed Unit	10%	35%
Four+ Bed Unit	20%	45%

[2] *Including both flats and houses*

Table 4.3 Site Wide Unit Mix Ranges – Key Worker Housing

Residential Dwelling Type[3]	Key Worker Housing	
	Minimum	Maximum
Single Person Unit	30%	55%
One Bed Unit	15%	35%
Two Bed Unit	10%	35%
Three + Bed Unit	2%	5%

Non-Residential Land Uses

4.22 As set out above in Table 4.1, the Proposed Development is seeking approval for up to 103,500m^2 GEA of non-residential floorspace comprising of the following:

- Up to 40,000m^2 (GEA) of employment floorspace (Use Class E (g) / Sui Generis). This will be located in the north-west corner of the site, within Plots A, B1 and B2;
- Up to 60,000m^2 (GEA) of academic floorspace (Use Class F1). This will be located in the east of the site, within Plots H1 and J; and
- Up to 3,500m^2 (GEA) of supporting retail, nursery, health and indoor sports and recreation uses (Use Class E (a) – E (g)). These uses will be located across the site within local hubs. Indicative locations for these uses are shown in Figure 4.2.

Maximum Heights and Scale

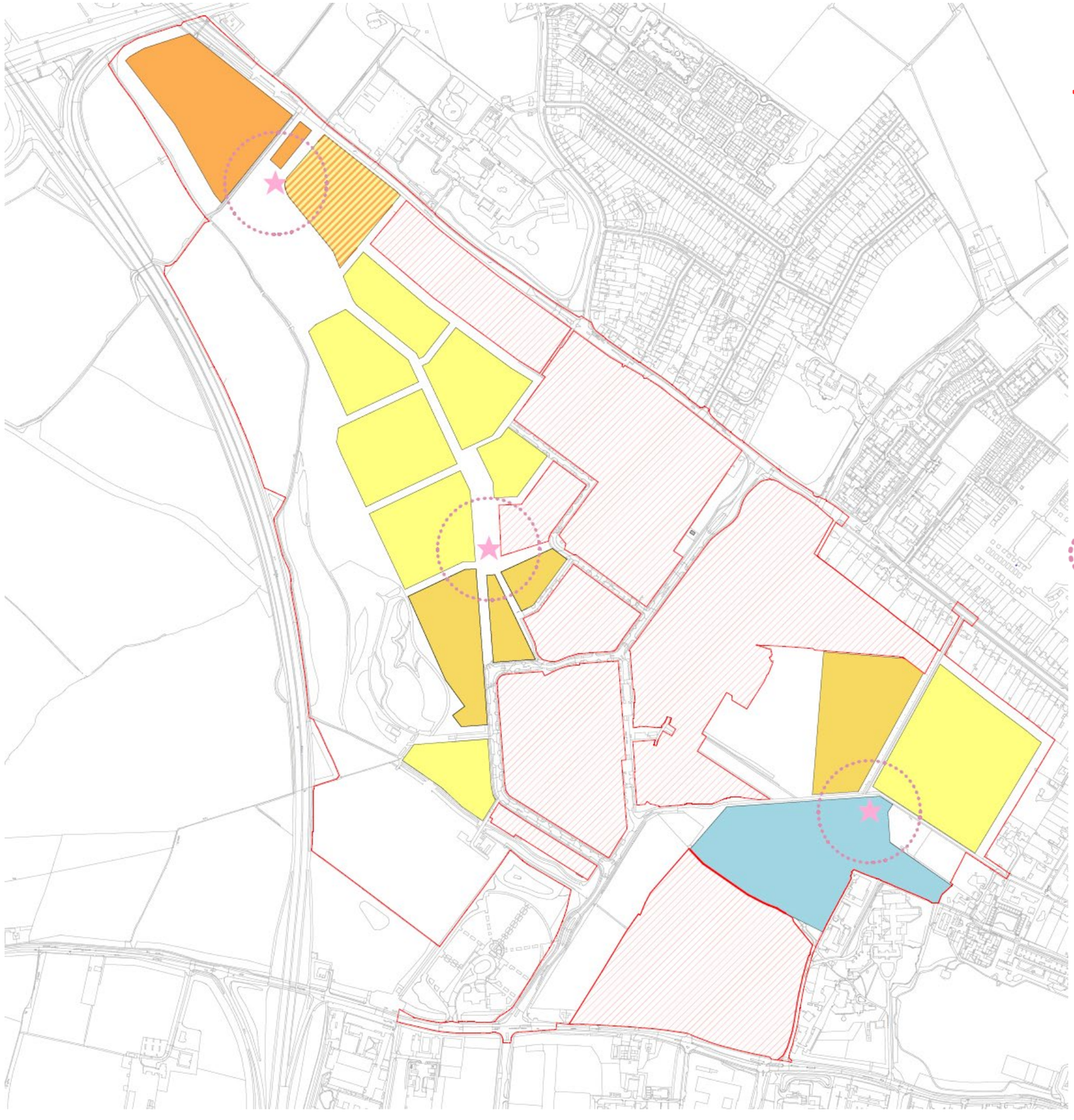
4.23 The maximum footprints (layout and scale), heights across development zones (scale) and land use distribution are defined on the Parameter Plans and further explained within the Design Code and Development Specification as these are the controlling documents submitted for approval under the OPA.

4.24 By defining the location and maximum extents of each Building Development Zone, the overall composition and massing is defined. All buildings that come forward within each Building Development Zone must comply with the maximum heights for that zone defined in the Proposed Maximum Heights Parameter Plan (Figure 4.3). No development shall be permitted beyond these vertical limits. Heights given are mAOD (metres Above Ordnance Datum) and number of storeys. The maximum mAOD heights include roof plant, parapets and lift overruns.

4.25 Buildings across the Proposed Development will generally range from up to 28.5mAOD to up to 49.5mAOD (from up to 3 to up to 7 storeys). There are some locations in the centre of the site (as shown in Figure 4.3) where buildings up to 52mAOD (up to 8 storeys) may be located.

[3] *Including both flats and houses*

Figure 4.2 **Land Use Parameter Plan**



Key

For Context

Site application boundary

Excluded from application

For Approval

Building Development Zones:

Living Uses, enabling residential floorspace (Class C3/C4), Cc-living (Sui Generis).

Living Uses, enabling residential floorspace (Class C3/C4), Cc-living (Sui Generis), student accommodation (Sui Generis) and Senior Living (Class C2).

Living Uses, enabling residential floorspace (Class C3/C4), Co-living (Sui Generis) and Senior Living (Class C2). Flexible Employment Floorspace (Class E(g) / Sui Generis research uses.

Academic Floorspace (Class F1), student accommodation (Sui Generis), Cc-living (Sui Generis).

Flexible Employment Floorspace (Class E(g) / Sui Generis research uses).

Indicative locations for retail, nursery, health, indoor sports and recreation uses (Class E(a) - (f)), such uses being permitted in all of the above areas.

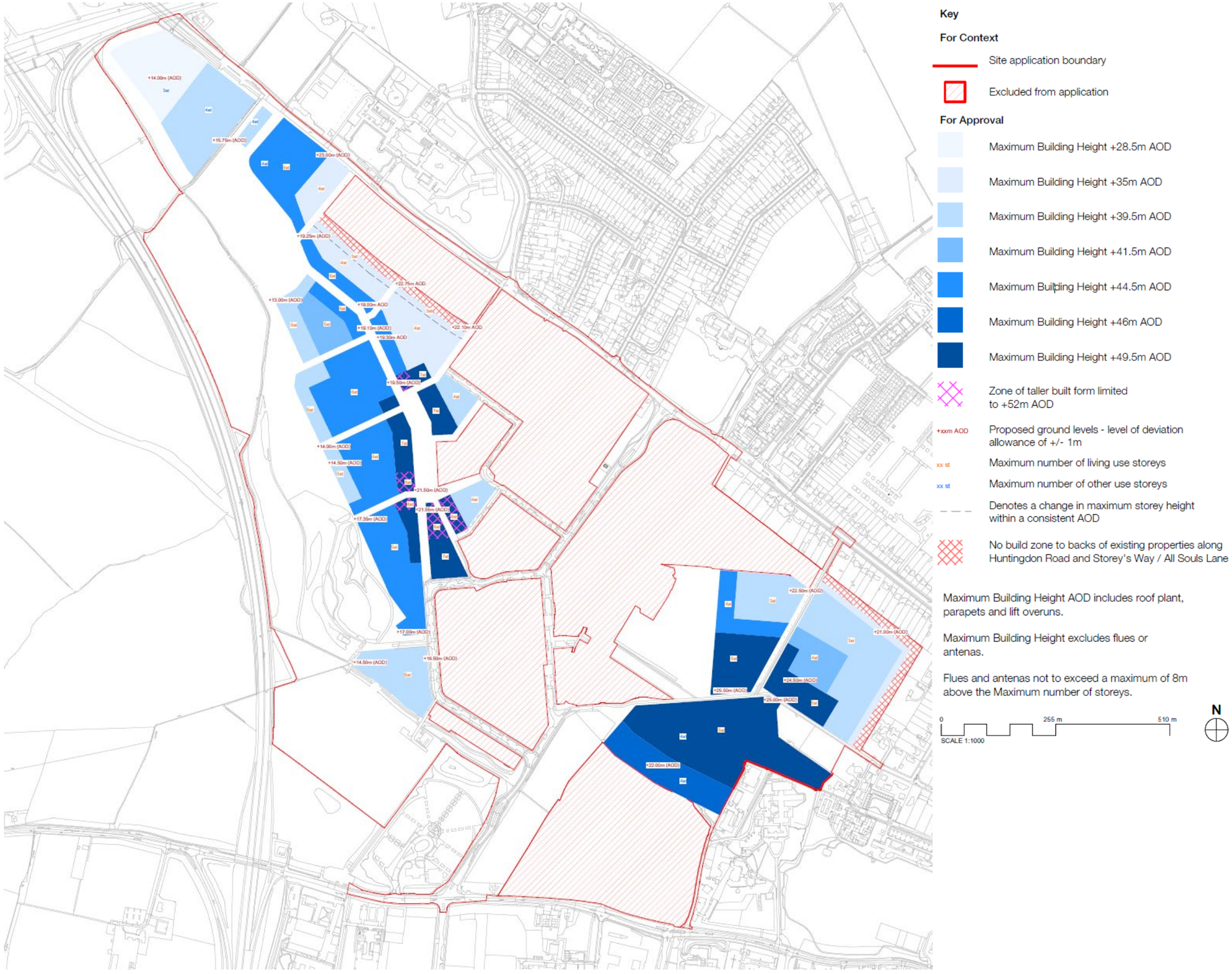
Note: all uses are subject to maximum amounts of floorspace as set out in the Development Specification.

0 255 m 510 m

SCALE 1:1000

N

Figure 4.3 Proposed Maximum Heights Parameter Plan



Key

For Context

Site application boundary

Excluded from application

For Approval

Maximum Building Height +28.5m AOD

Maximum Building Height +35m AOD

Maximum Building Height +39.5m AOD

Maximum Building Height +41.5m AOD

Maximum Building Height +44.5m AOD

Maximum Building Height +46m AOD

Maximum Building Height +49.5m AOD

Zone of taller built form limited to +52m AOD

+xxm AOD — Proposed ground levels - level of deviation allowance of +/- 1m

xx st — Maximum number of living use storeys

xx st — Maximum number of other use storeys

Denotes a change in maximum storey height within a consistent AOD

No build zone to backs of existing properties along Huntingdon Road and Storey's Way / All Souls Lane

Maximum Building Height AOD includes roof plant, parapets and lift overuns.

Maximum Building Height excludes flues or antenas.

Flues and antenas not to exceed a maximum of 8m above the Maximum number of storeys.

0 255 m 510 m

SCALE 1:1000

N

MEANS OF ACCESS AND MOVEMENT

4.26 The means of access and circulation are set out on the Access and Movement Parameter Plan including vehicle access, segregated cycle access and shared pedestrian access routes, shown in Figure 4.7.

4.27 The main access route through the site will be a new primary road known as Cartwright Avenue, which will connect Huntingdon Road at the north-west of the site to Turing Way (located within Phase 1 of the 2013 OPP).

4.28 Vehicle access to the site will be provided by six primary access points, three of which are existing:

- North-East Huntingdon Road Access – existing access located to the north-east of the site, along Huntingdon Road joining Eddington Avenue. This was approved and implemented as part of the 2013 OPP;
- Madingley Road Access – existing access located to the south of the site, along Madingley Road (A1303) joining Eddington Avenue. This was approved and implemented as part of the 2013 OPP; and
- Madingley Rise Access – existing access located to the south-east of the site along Madingley Rise.

4.29 New vehicular access to the site is proposed at the following locations:

- North-West Huntingdon Road Access – a new signalised junction on Huntingdon Road joining the proposed Cartwright Avenue;
- New vehicular access located to the north-west of the site from Huntingdon Road into the area of Plot A of the Illustrative Masterplan; and
- New vehicular access located to the north-west of the site from Huntingdon Road into the area of Plot B2 of the Illustrative Masterplan.

Detailed Access

4.30 The North-West Huntingdon Road access is proposed as one of the primary means of access to the site and will provide vehicular access to the proposed Cartwright Avenue. The detail of this new primary means of access is shown in Figure 4.8.

4.31 This access point will comprise the following:

- Signalised junction between Cartwright Avenue and Huntingdon Road (Location 1 in Figure 4.8). This signalised arrangement will include:
  - One large approach on each arm plus right turn lane into the site from the north-west;
  - No right turn from Cartwright Avenue with physical restriction, staggered controlled crossing over Cartwright Avenue;
  - No crossing over Cartwright Avenue arm;
  - No crossing facilities over Huntingdon Road to reduce impact on capacity and account for crossing facilities provided north and south;
- Two additional priority-controlled accesses off Huntingdon Road into the two main northern employment plots (Locations 2 and 3 in Figure 4.8) ;
- Uncontrolled crossing points over each priority access set back from main carriageway with drop kerbs, tactiles, appropriate visibility, and kerb radius to accommodate vehicles expected at each;
- Local Transport Note (LTN) 1/20[4] compliant cycle infrastructure; and
- On-road uni-directional cycle track on Huntingdon Road south of the junction.

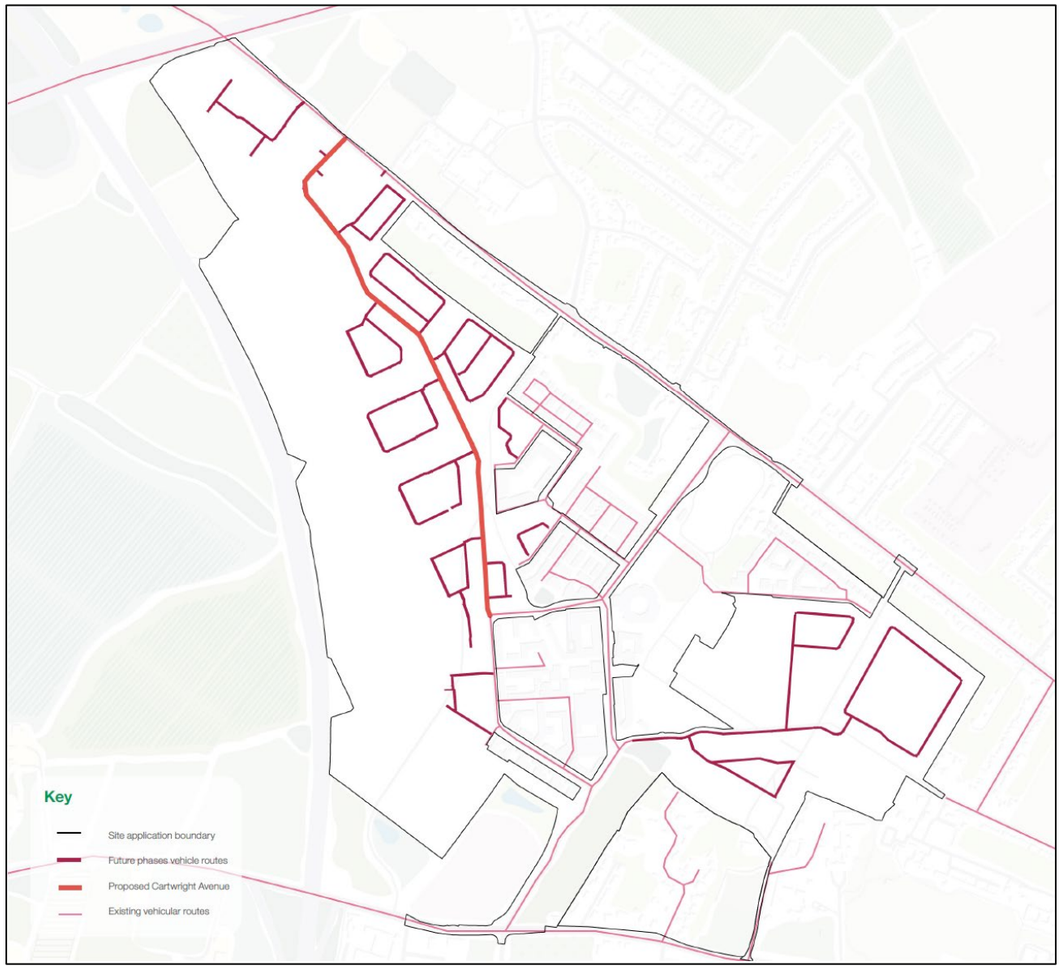
4.32 The Proposed Development also includes an upgrade to the North-East Huntingdon Road, to include a new right turn signal head and signal timings to allow for right turn movements to give way.

[4] *Department for Transport (DfT) 2020; Local Transport Note 1/20 Cycle Infrastructure Design*

Secondary and Tertiary Street Network

4.33 A network of secondary streets will provide access to, and movement through, building development zones, creating links between the main route through the site, Cartwright Avenue, and the residential and non-residential uses within the site. The position and alignment of secondary, tertiary and ancillary access (shown in Figure 4.4) have been designed in outline at this stage, and will be developed as part of future RMAs.

Figure 4.4 Vehicle Routes (Illustrative)



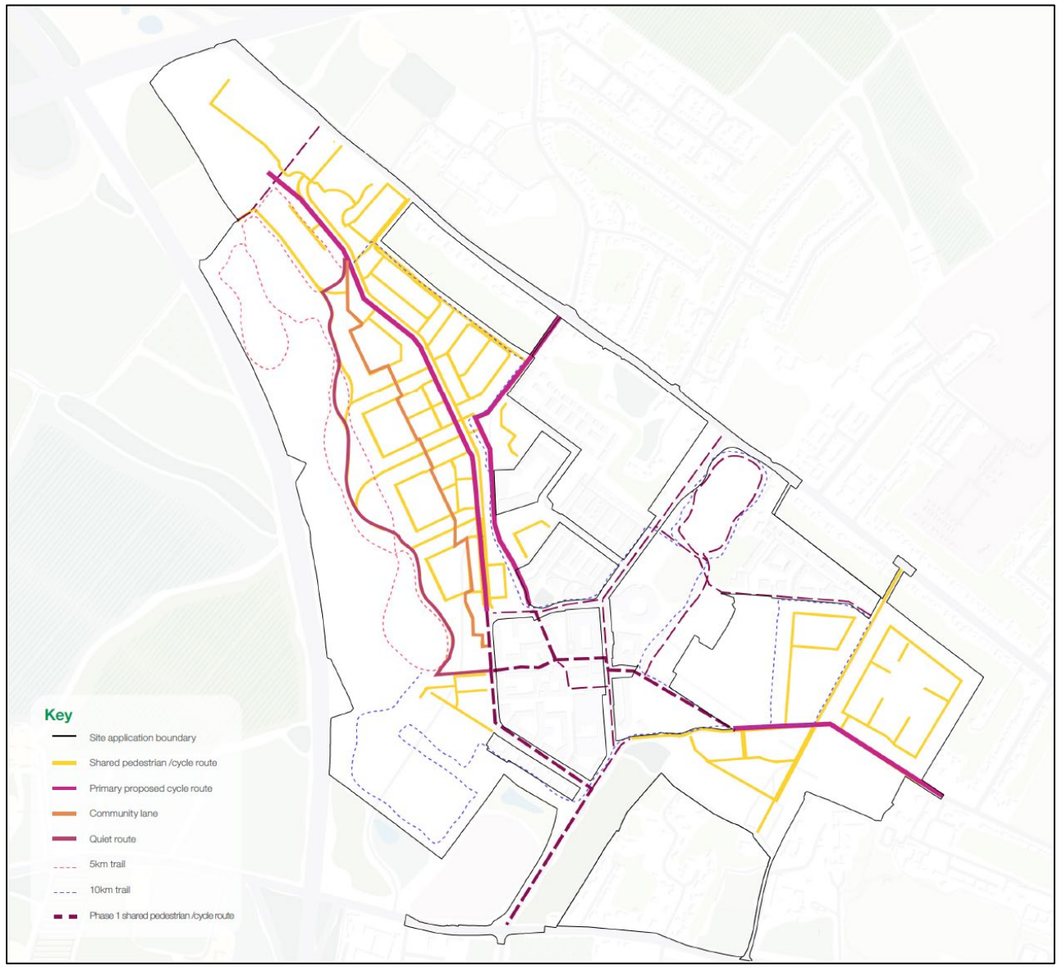
Pedestrian and Cycle Access

4.34 Pedestrian corridors along the Public Right of Way (PRoW') (Footpath 99/5) and footpaths which cross the site are to be retained and the network is extended with new footpaths and cycleways. Accessible and safe routes will encourage walking and cycling as the primary modes of transport within the site and the adjoining surrounding area.

4.35 New pedestrian and cycle routes both on and off street are proposed to provide connections to essential facilities, services and amenities and open space.

4.36 Pedestrian and cycle routes across the Proposed Development are shown on Figure 4.5. The detail with regard to these pedestrian and cycle links has been designed in outline at this stage will be developed as part of future RMAs.

Figure 4.5 Pedestrian and Cycle Routes (Illustrative)



Car and Cycle Parking

4.37 Car and cycle parking will be provided in line with the North West Cambridge Area Action Plan (AAP)[5].

4.38 The number of car parking spaces will be sufficient to meet the needs of the Proposed Development while avoiding an over-reliance on private vehicles. In accordance with the North West Cambridge AAP, at least 5% of the total number of car parking spaces will be disabled spaces. Electric vehicle charging provision will be provided in accordance with the Greater Cambridge Sustainable Design and Contraction SPD (2020).

4.39 Details on car and cycle parking will be established as part of future RMAs.

Public Transport

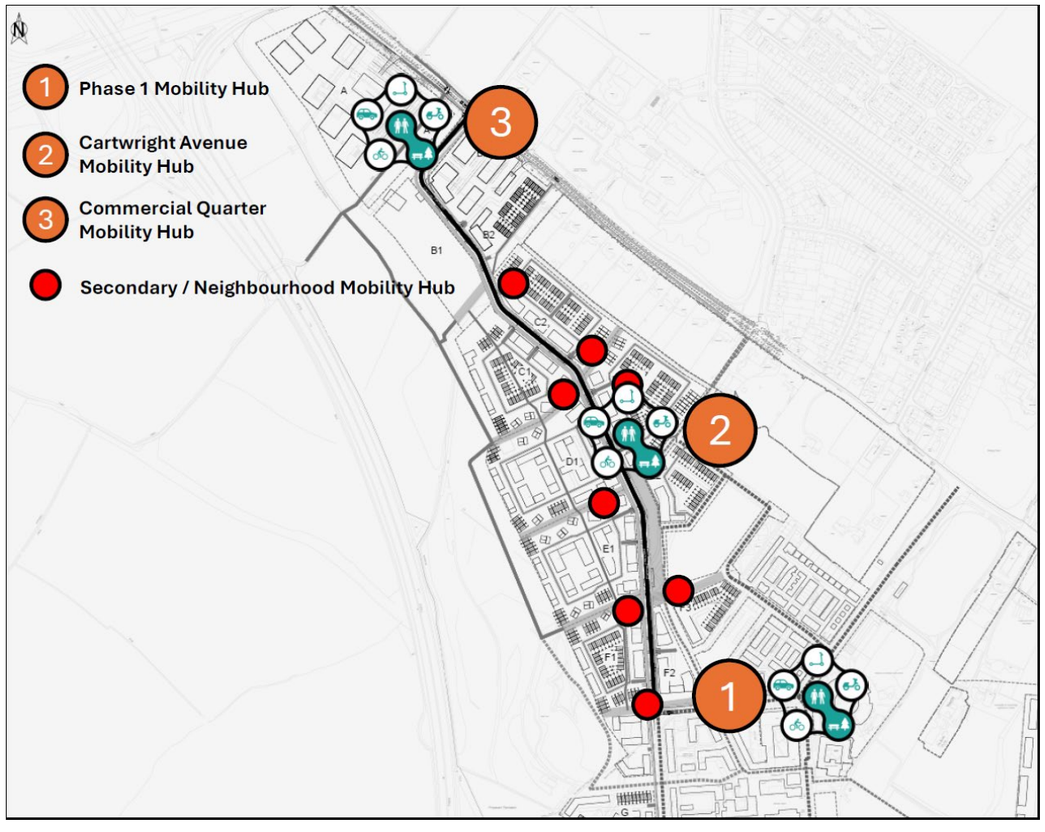
4.40 The Proposed Development has been designed to continue to accommodate buses via Eddington Avenue and Cartwright Avenue has been designed to the appropriate width to accommodate new and diverted buses via the North-West Huntingdon Road access.

4.41 A network of three primary mobility hubs is proposed within the Proposed Development. Mobility hubs seek to cluster complementary transport modes and services. The initial locations of the three primary mobility hubs are proposed as follows, as shown in Figure 4.6:

- To the north of Cartwright Avenue, nearby to the commercial uses in the north-west of the site;
- On the eastern side of Cartwright Avenue; and
- At the existing Eddington local centre, nearby to Storey's Field Community Centre.

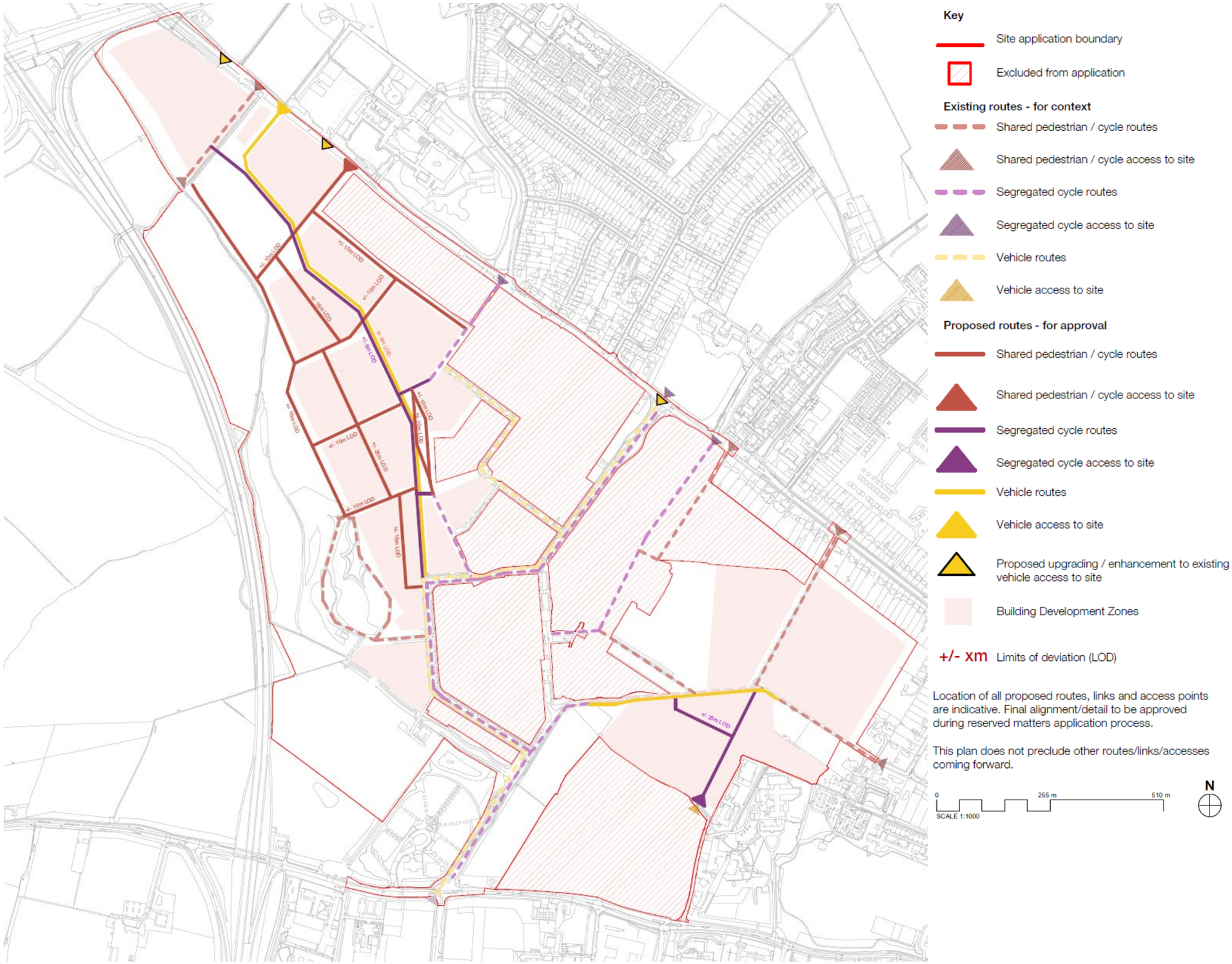
4.42 Details and locations of proposed mobility hubs will be established at part of future RMAs.

Figure 4.6 Indicative Mobility Hub Locations (Illustrative)



[5] *Cambridge City Council and South Cambridgeshire District Council (2009); North West Cambridge Area Action Plan, Local Development Framework*

Figure 4.7 Access and Movement Parameter Plan



Key

- Site application boundary
- Excluded from application

Existing routes - for context

- Shared pedestrian / cycle routes
- Shared pedestrian / cycle access to site
- Segregated cycle routes
- Segregated cycle access to site
- Vehicle routes
- Vehicle access to site

Proposed routes - for approval

- Shared pedestrian / cycle routes
- Shared pedestrian / cycle access to site
- Segregated cycle routes
- Segregated cycle access to site
- Vehicle routes
- Vehicle access to site
- Proposed upgrading / enhancement to existing vehicle access to site
- Building Development Zones
- +/- xm Limits of deviation (LOD)

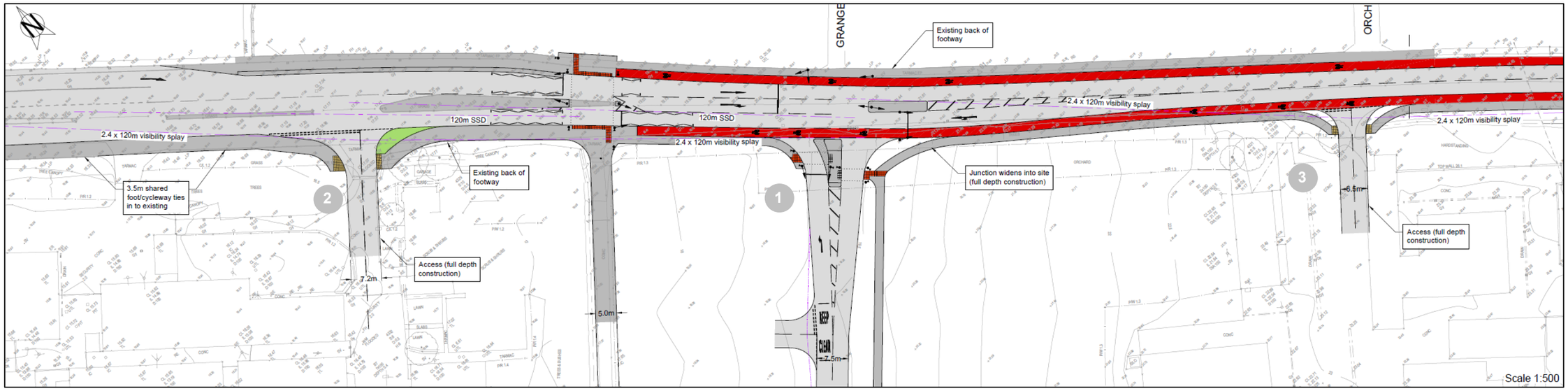
Location of all proposed routes, links and access points are indicative. Final alignment/detail to be approved during reserved matters application process.

This plan does not preclude other routes/links/accesses coming forward.

0 255 m 510 m
SCALE 1:1000

N

Figure 4.8 Detailed Access Plan (Huntingdon Road (A1307))



CHARACTER AREAS (PLACES)

4.43 The appearance of the Proposed Development shall be defined by the various character areas / places and as appearance is reserved for subsequent approval by the GCSPS, on behalf of SCDC and CCC, the appearance of the Proposed Development is controlled through the Design Code that is sought for planning approval.

4.44 The Proposed Development adopts a 'Character Area' approach for residential development areas, to ensure it responds to local context. Each character area has a distinct identity, appearance and function. The character areas are described below and illustrated on Figure 4.9:

- Shared Gardens – the Shared Garden will provide informal open space, where vehicle movements have been removed. They will comprise formal and informal child doorstep playable space, communal growing spaces, Sustainable Urban Drainage Systems (SuDS) and active travel routes for pedestrian and cyclists.
- Neighbourhoods – buildings and landscape contribute to define multi-use streets that have a pedestrian character but allow different forms of movement catering for the practical needs of every home. Planting and water management, communal uses for play and growing, walking and cycling are also embedded in the streetscape;
- Community Lane- a pedestrian priority, safe and leisurely street. Connecting through the school to the community centre and local centre, to formal sports and growing areas to the north of the site;
- Gravel Hill – the eastern most part of the site, combining a mix of uses including an academic quarter, residential and student accommodation. Separated from Phase 1 of the 2013 OPP by green infrastructure, it has a unique setting including the Girton Gap and partial extent of the Traveller's Rest Pit SSI with its 10m buffer zone;
- Cartwright Avenue & The Common – a spine providing vehicular access to the western area of the site. It includes a street with unidirectional cycle lane linking to the existing Turing Way, an open space, a street with bidirectional cycle land and a landscaped verge. The Common sits to the south of Cartwright Avenue and comprising of public realm in which movement corridors navigate east and west;
- Innovation Street – a flexible cluster of innovation uses including mid-tech industries and employment space, organised around a street connected to Cartwright Avenue; and
- Brook Leys – a significant area of public realm, with existing features such as the Washpit Brook and lagoon. The space is defined by its varied and undulating natural landscape. This provides a green edge to the Proposed Development where biodiversity will thrive, and will enhance and protect habitats whilst allowing residents to connect to nature.

4.45 The Urban Design Parameter Plan is shown in Figure 4.10, which shows key features such as frontages viewpoints, open spaces and clusters of activity.

Figure 4.9 Character Areas

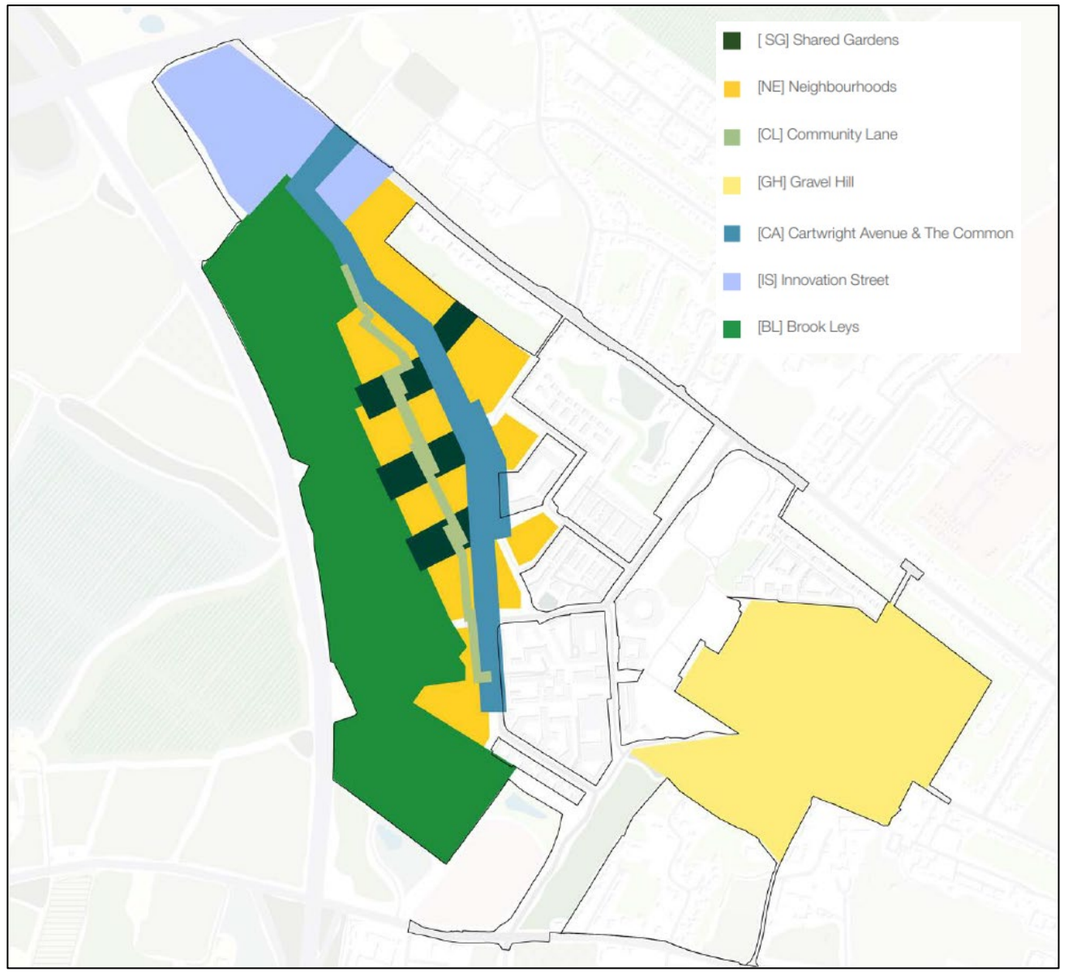
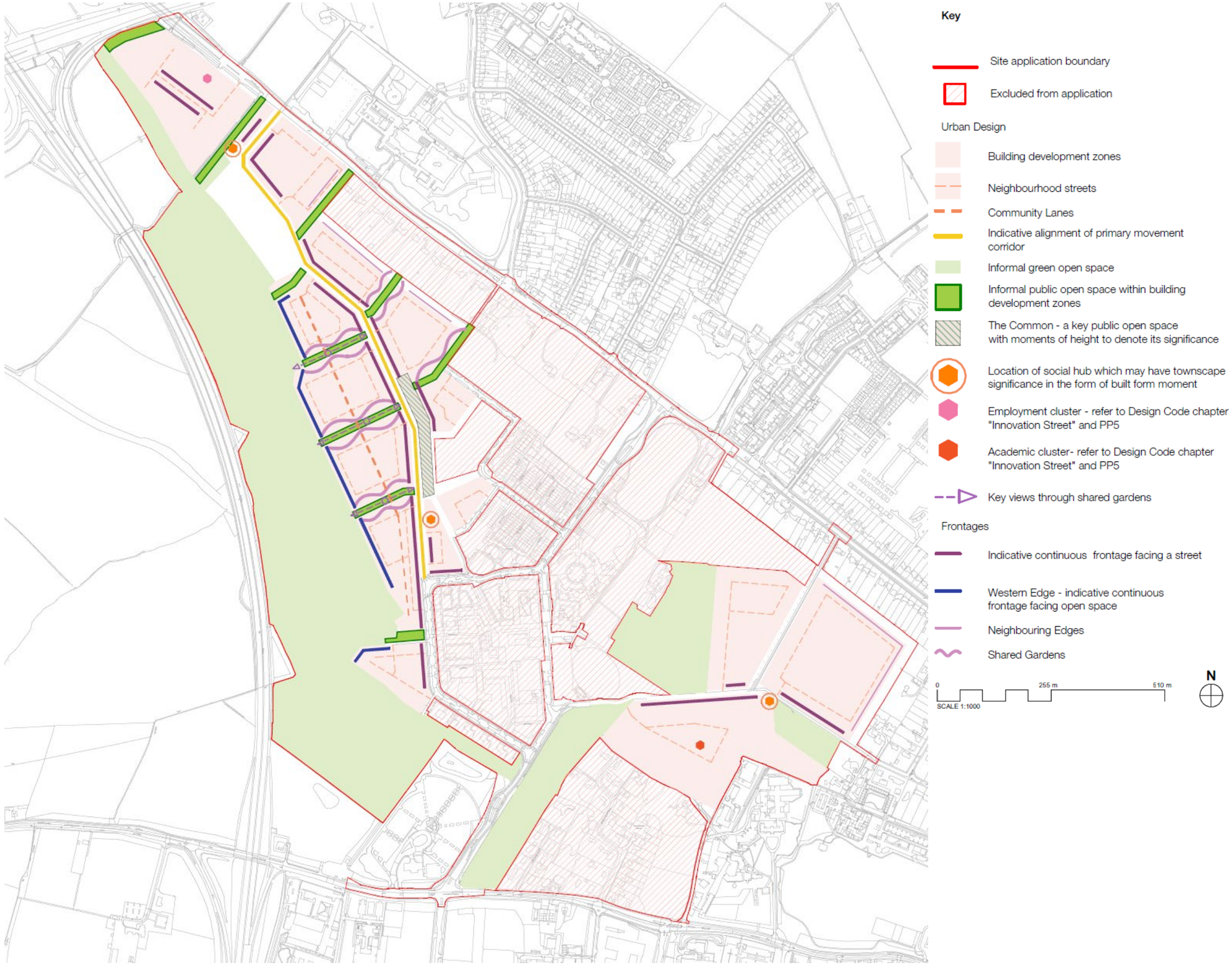


Figure 4.10 Urban Design Parameter Plan



GREEN INFRASTRUCTURE, PLAY AND OPEN SPACE

4.46 The landscape strategy will create a soft edge between city and countryside, enhancing the site's identity as a sustainable, nature-rich area. It will deliver multi-functional, biodiverse spaces that support placemaking, health and wellbeing with access to play, sport, and productive landscapes.

4.47 The Proposed Development will include a variety of landscaping features, with each phase of the Proposed Development providing public and private open space for residents and visitors to the site. Green infrastructure takes the form of the following, but not limited to:

- Informal open space and associated facilities, new planting, SuDS and public art,
- Formal equipped playspaces and informal playable spaces and play on the way;
- Formal sports pitches and courts, as well as informal fitness and running trails;
- Allotments and community gardens;
- Structural planting; and
- Existing trees / woodland.

4.48 The proposed landscape approach includes the creation of several distinct landscape character areas, which are defined primarily by their intended use. The key landscape character areas are shown in Figure 4.11 and are as follows:

- Brook Leys – sits within the Cambridge Green Belt and is an important ecological and amenity asset for Eddington. The Washpit Brook corridor is a valuable home for wildlife and will support much of the Proposed Development's SuDS strategy, managing water as it naturally flows towards the brook. Playable areas, with growing space close to the development edge, will be located within a large scale natural setting with an emphasis on habitat creation. Excess soil from existing material stockpiles site building works will be reused to form gentle landforms west of the Washpit Brook;
- The Common – comprises a linear urban park with play, seating and planting amongst the wider movement infrastructure (Cartwright Avenue). Trees line the movement corridors and aid in wayfinding. It also includes a space for pop-up or temporary events; and
- Shared Gardens – will provide doorstep and communal growing spaces, social spaces and gathering points, playspace and playable features, public art, rain gardens integrated with play, movement corridor for active travel.

4.49 Table 4.4 provides a summary of the proposed open space and playspace provision across the Proposed Development, as well as across the wider North West Cambridge Development Masterplan. The Green Infrastructure, Play and Open Space Parameter Plan is shown in Figure 4.17.

Table 4.4 Open Space Areas – Per Type

Public Open Space Type	Proposed Development Provision (ha)	Wider North West Cambridge Development Masterplan (including Phase 1) Provision
Sports Pitches / Courts	10.24	14.97
Informal Open Space	45.36	48.54
Allotments and Community Gardens	4.87	5.22
Playspace	2.00	3.79

Figure 4.11 Landscape Strategy



Playspace

4.50 The Proposed Development will provide a network of inclusive and equipped play and engaging playable spaces, distributed across the site. Play typologies have been based on the provision set out under the North West Cambridge Area Action Plan 'Strategy for Youth Facilities and Children's Play':

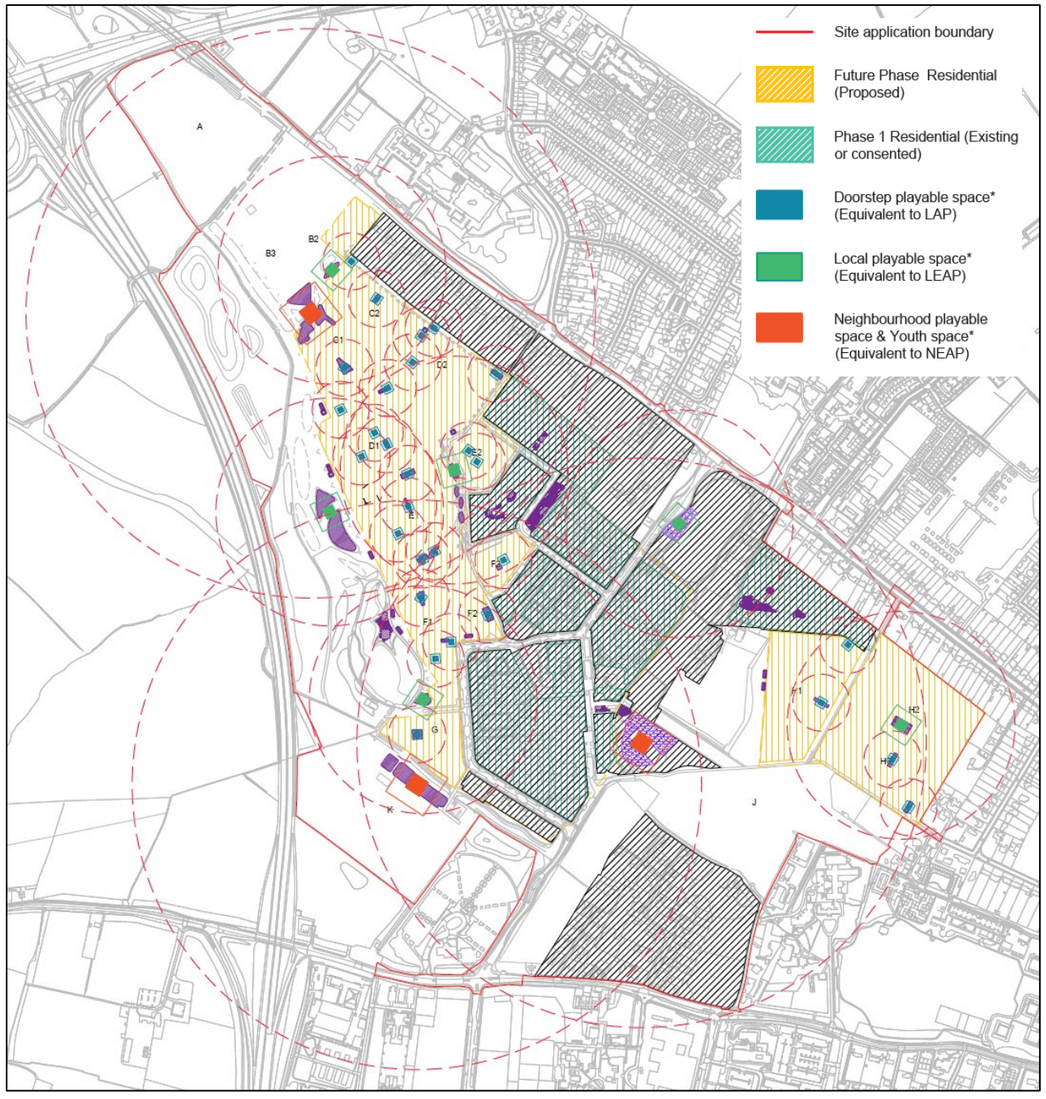
- Doorstop Playable Space (equivalent to Local Area for Play (LAP));
- Local Playable Space (equivalent to Local Equipped Area for Play (LEAP)); and
- Neighbourhood Playable Space and Youth Space (equivalent to Neighbourhood Equipped Area for Play (NEAP)).

4.51 Playspaces will be integrated into their landscape and public realm. Table 4.5 provides a summary of the playspace provision per play typology, and Figure 4.12 shows the illustrative playspace provision across the Proposed Development.

Table 4.5 Site Wide Play Provision

Playspace Category	Provision (m^2)
Doorstep Play	5,070
Local Play	6,410
Neighbourhood Play	7,520
Informal Play	1,000

Figure 4.12 Child Playspace Provision (Illustrative)



Sports Pitches and Recreational Uses

4.52 The Proposed Development includes the provision of sports pitches and recreational uses. Formal sports uses will be provided in two principal locations:

- Amenity Cluster C – located in Plot K of the Illustrative Masterplan, immediately west of the existing Madingley Road Park and Ride, this sports and amenity cluster will comprise formal sports provision, informal trails, foraging and habitat areas. The specific parameters of the sports provision will come forward as part of future RMAs, however Figure 4.13 shows the illustrative sports and amenity strategy for this cluster. This includes the provision of the following:
  - 3 x 3G football pitches;
  - 4 x tennis courts; and
  - 1 x 3G sports pitch.
- Amenity Cluster D – located in Plot B3 of the Illustrative Masterplan, within the north-western corner of the site, this sports and amenity cluster will serve the northern neighbourhoods and wider community with sports and allotments provision. As stated above, the specific parameters of the sports provision will come forward as part of future RMAs, however Figure 4.14 shows the illustrative sports and wider amenity strategy for this cluster, which may includes a BMX track, for example.

Lighting Strategy

4.53 Phase 1 of the 2013 OPP incorporates higher light levels to support urban dynamics, ensuring key routes and public spaces are well-lit for both safety and visibility. The Proposed Development lighting levels will gradually decrease, particularly in residential areas and Shared Garden spaces. In these quieter zones, the light levels will drop to lower thresholds, contributing to a sense of calm while maintaining sufficient illumination for pedestrian safety. This hierarchical approach allows for a smooth transition from areas of higher activity to residential environments.

4.54 In addition to adjusting light levels, warmer colour temperatures (2700K, amber or red colour) will be used to minimise ecological impacts. Warmer tones help reduce the attraction of insects to artificial lights, thereby supporting local biodiversity and minimising negative ecological impacts. Furthermore, by incorporating dimmable LED technology, the lighting system will adapt to varying activity levels throughout the day and night. This flexibility allows for dynamic adjustments, enhancing visual comfort and supporting energy efficiency.

4.55 In the residential areas, light columns with a height of 6 meters will be used for road carriageways. For cycle routes, footpaths, and secondary roads, a height of 4 meters will provide adequate lighting for vehicles, pedestrians, and cyclists. Bollard and low-level lighting will be used for more focused illumination along pathways and in amenity spaces. The design integrates with the surrounding landscape, minimising light pollution and ensuring a safe, sustainable environment for residents.

4.56 The Proposed Development lighting strategy is shown in Figure 4.15, which illustrates the areas where no lighting is proposed.

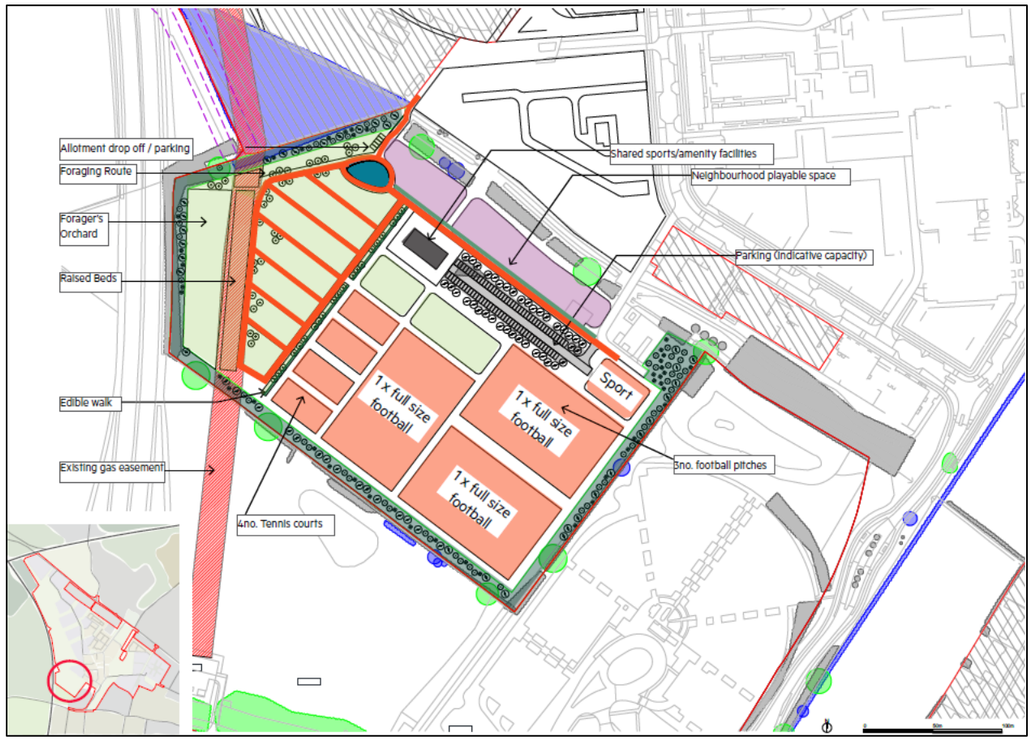
Sports Pitch Lighting

4.57 The proposed lighting strategy for the sports pitches within the Proposed Development will balance performance with environmental sensitivity. It will prioritise minimising light spill into ecological sensitive areas, reducing glare towards nearby residential zones and ensures compliance with specific illumination standards required for a variety of sports. The following lighting is proposed for Amenity Cluster C, based on the Illustrative Masterplan:

- Illuminance – 75 lux for football pitches and 200 lux for tennis courts. The luminaires proposed are warm colour temperature (3000K) or very warm colour (2700K) and adjustable with hood accessories to minimise light spill; and
- Lighting Design – 12m high columns with multiple luminaires on a bracket mounted system.

4.58 Figure 4.16 shows the resultant light intrusion into the surrounding area from the proposed lighting system on Amenity Cluster C. No lighting is required around Amenity Cluster D.

Figure 4.13 Amenity Cluster C (Illustrative)



Allotments (incl. zones of raised beds and foragers's orchard)

Circulation and trails

Neighbourhood playable space

Formal (3G) sports pitches/courts

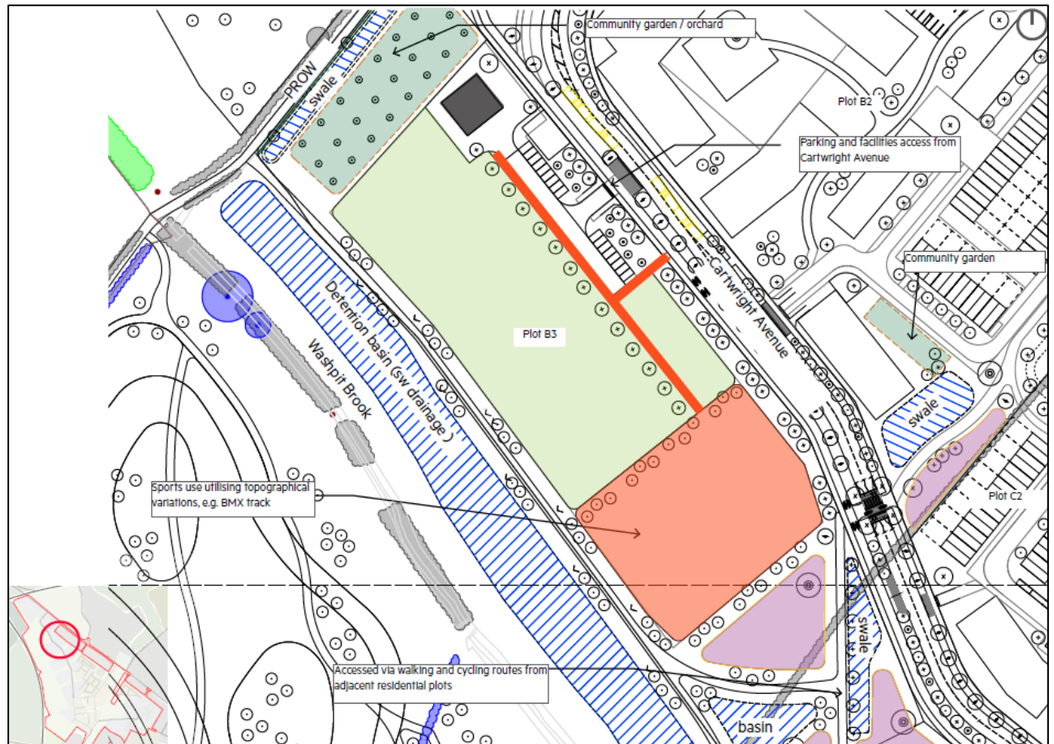
Facilities hub plus parking (indicative provision)

Native woodland planting, meadow or pollinator corridors

Pond (replacement habitat for temporary haul road pond)

Native species hedgerow

Figure 4.14 Amenity Cluster D (Illustrative)



Allotments

Proposed Neighbourhood and local playable spaces (located within adjacent plots)

Proposed sport provision, for example, pump track or BMX

Facilities hub plus parking (indicative provision)

Figure 4.15 Proposed Development Lighting Strategy (Illustrative)



Type 1 - Primary routes: 7.5 lx not falling below 1.5 lx

Type 2 - Secondary routes: 5.0 lx not falling below 1.0 lx (pre-curfew), 3.0 lx not falling below 0.6 lx (post-curfew)

Type 3 - Pedestrian routes/ridgeway: 3.0 lx not falling below 0.6 lx (pre-curfew), 2.0 lx not falling below 0.4 lx (post-curfew)

Type 4 - No lighting in woodland area / Accent lighting in Community Lane or shared garden

Figure 4.16 Amenity Cluster C Light Intrusion (Lux)

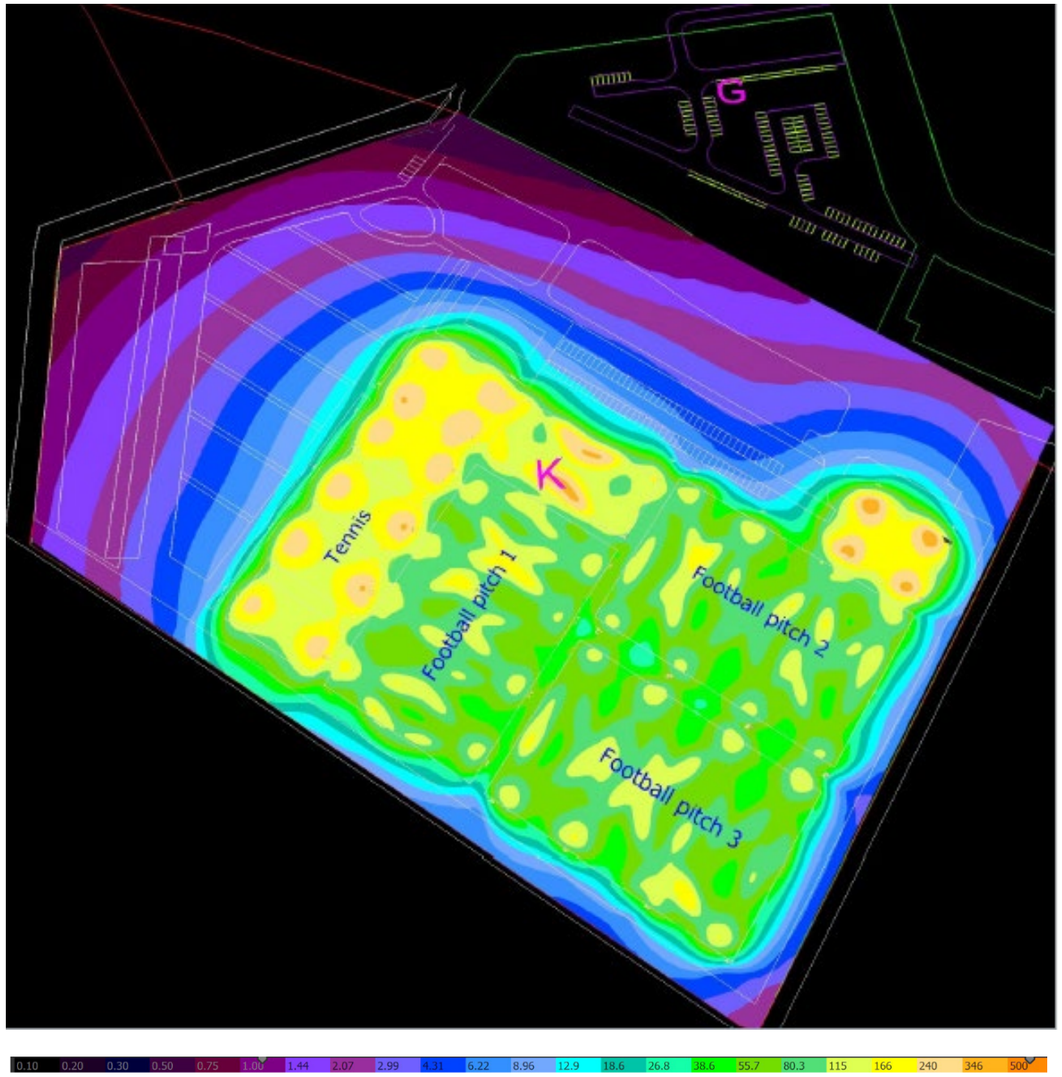
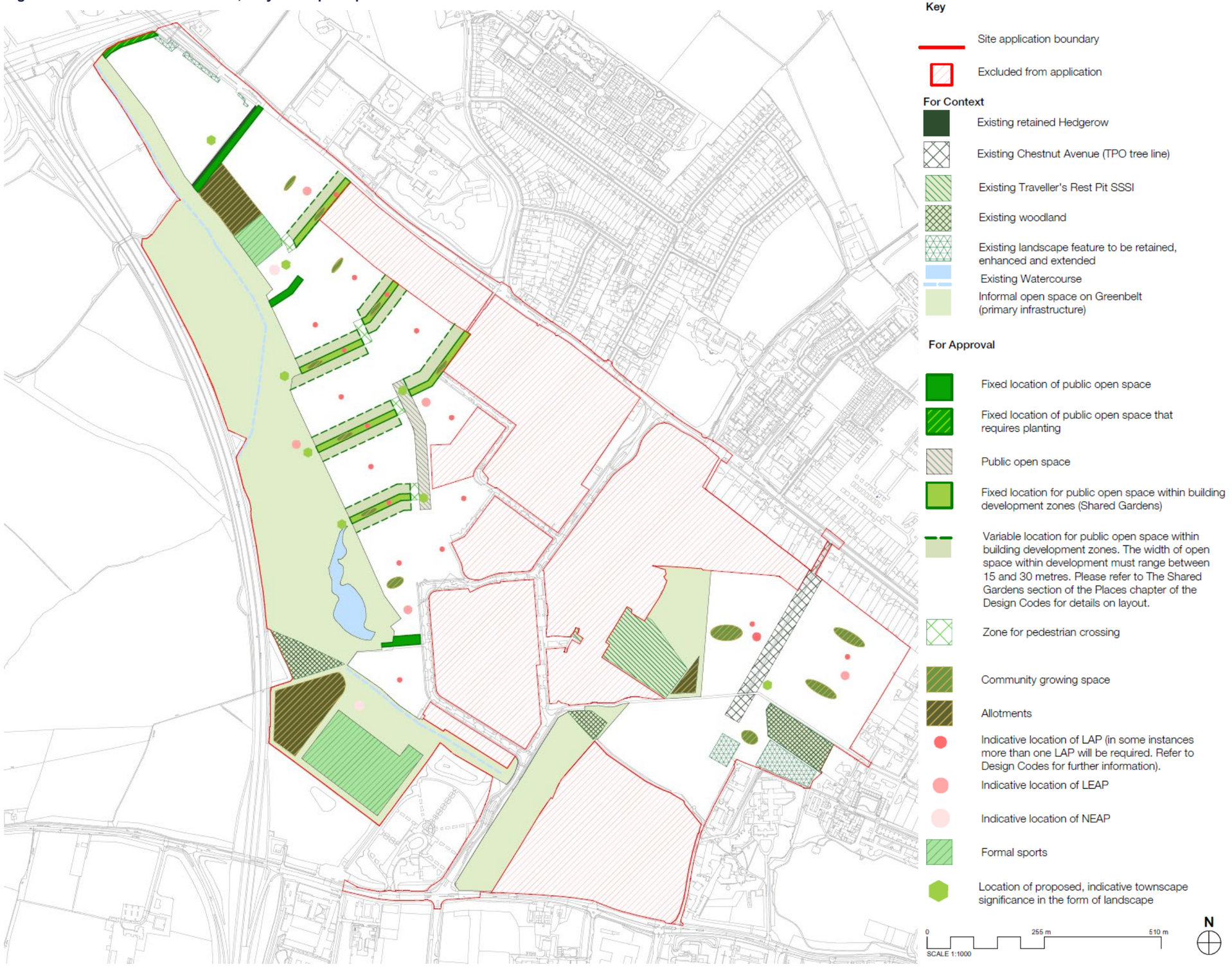


Figure 4.17 Green Infrastructure, Play and Open Space Parameter Plan



ILLUSTRATIVE MASTERPLAN

4.59 An Illustrative Masterplan, as shown in Figure 4.18, has been developed to accompany the OPA. The Illustrative Masterplan represents a version of Proposed Development that could come forward within the maximum proposed floorspace and in compliance with the Parameter Plans. Where necessary, the Illustrative Masterplan has been referenced throughout this ES chapter.

Figure 4.18 Illustrative Masterplan[6]



[6] *This figure illustrates one way in which the Proposed Development could come forward.*

Amount of Development

4.60 A summary of the floorspace areas within the Illustrative Masterplan is provided in Table 4.6, all of which are within the limits set out in Table 4.1.

Table 4.6 Illustrative Masterplan Floorspace

Land Use		Amount (GEA) (m^2)
Residential	Residential (Use Class C3 / C4)	355,596
	Student Accommodation (Sui Generis)	51,513
Non-Residential	Flexible Employment Floorspace (Use Class E(g) / Sui Generis)	39,460
	Academic Floorspace (Use Class F1)	59,708
TOTAL		**506,277**

Residential Uses

4.61 The Illustrative Masterplan includes the provision of 3,742 residential units, as shown in Table 4.7, and 1,730 student accommodation units.

4.62 With regard to the other uses proposed in the OPA, it is envisaged that co-living floorspace and unit numbers would mirror that of the student accommodation given the similarities in the configuration of the two uses.

4.63 In future RMAs, these uses, alongside the Use Class C3 / C4 residential use was 'drawn down' from the overall 417,000m^2 floorspace cap set out in Table 4.1. Also in future RMAs, ancillary retail, nursery and recreation uses, as well as Senior Living accommodation could be accommodated in those areas identified on the Land Use Parameter Plan (Figure 4.2).

Table 4.7 Illustrative Masterplan Housing Mix

Residential Dwelling Type	Market			Key Worker	Total
	Flats	Houses	Total		
Single Person Unit	45 (5%)	-	45 (3%)	645 (30%)	690 (18%)
One Bed Unit	317 (35%)	-	317 (20%)	752 (35%)	1,069 (30%)
Two Bed Unit	522 (55%)	32 (5%)	554 (35%)	698 (32.5%)	1,252 (33%)
Three Bed Unit	68 (5%)	192 (30%)	260 (16%)	54 (2.5%)	314 (8%)
Four + Bed Unit	-	417 (65%)	417 (26%)	-	417 (11%)
TOTAL	**952**	**641**	**1,593**	**2,149**	**3,742**

EMBEDDED MITIGATION AND ENVIRONMENTAL ENHANCEMENTS

4.64 Mitigation refers to "*measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment*"[7]. Throughout the design process environmental mitigation measures have been incorporated (i.e. 'embedded') into the outline design of the Proposed Development[8] to prevent, reduce and offset potentially adverse effects on the surrounding area. In addition, environmental enhancement measures have been incorporated (i.e. 'embedded') into the design, where practicable, to improve the existing environmental conditions of the site and surrounding area.

Ecology and Biodiversity

4.65 A number of measures have been incorporated into the design of the Proposed Development to avoid and mitigate ecological effects, and where possible, enhance biodiversity on the site. The measures include the following, as show in Figure 4.19:

- Retention of existing woodland within the site, including Storey's Way Wood, Cricket Pitch Wood and Pheasant Plantation, as well as retention of Tree Preservation Order (TPO) trees along Horse Chestnut Avenue;
- Retention and protection of the Washpit Brook, including the 10m riparian zone, where no development will take place;
- Retention of the existing lagoon at Brook Leys and other wetland habitats created during Phase 1 of the 2013 OPP;
- Provision of new and enhanced habitats for example additional native species-rich hedgerow, new ponds, and planting of new native trees across the site; and
- Provision of bat, bird and owl boxes across the site.

4.66 The proposed Lighting Strategy includes the provision of 'dark corridor', as shown in Figure 4.15, and has incorporated the following measures that will reduce the impact of lighting on ecological receptors, including birds and bats:

- After midnight, lights on Cartwright Avenue and on-plot will be automatically dimmed to 20% brightness, and will only increase to 100% brightness when triggered by a vehicle, cyclist or pedestrian, returning to the dimmed state after 30 seconds. Lights on pedestrian or cycle routes will do the same but will dim to 0% output;
- There will be no lighting of pedestrian routes along Horse Chestnut Avenue, along the track on the site's southern boundary between Gravel Hill Farm and Cricket Pitch Wood, or within the Ridge and Furrow Fields;
- No additional lighting is proposed along the swale between Kendrew Place and Eddington Avenue, and the continuation of this towards Pheasant Plantation will remain unlit on the south-west side of the hedgerow through a play area, and only limited light spill from the adjacent Plot G is likely to affect the north-east side of the hedgerow and the swale;
- There will be no lighting along Washpit Brook, within the riparian zone or to the west of the brook;
- No lighting of the edge of Pheasant Plantation is proposed;
- Lighting columns proposed along Garrod Street will be positioned to face away from Cricket Pitch Wood. Lower columns at greater intervals have been proposed for this location to minimise light spill;
- The cycleway along the northern edge of Storey's Way Wood will be lit using low level bollard lighting to minimise light spill onto the woodland edge, and avoid light spill onto trees at heights where roosts may be present; and
- The cycleway along the northern half of a hedgerow along the existing PRoW (Footpath 99/5) will be lit using low level bollard lighting to minimise light spill onto the hedgerow, and avoid light spill onto trees at heights where bat roosts may be present.

4.67 Detailed landscape plans including species list will be developed as part of subsequent RMAs. Future RMAs would include the detail of where the above listed measures have been incorporated into the design of future buildings, infrastructure and landscaping to support ecological enhancements across the site. A Landscape Maintenance and Management Plan has been prepared in support of the OPA, which sets out a strategic approach to the maintenance and management of the proposed hard and soft landscaping.

Biodiversity Net Gain

4.68 National Planning Policy Framework (NPPF) and under the Environmental Act 2021 all planning permissions granted in England (with a few exemptions) will have to deliver at least 10% biodiversity net gain. The NPPF states that the planning system should '*contribute to and enhance the natural and local environment by minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*'. Following the issue of the NPPF, all planning decisions should aim to maintain and enhance, restore, or add to biodiversity conservation interests. Biodiversity Net Gain (BNG) using the Statutory Biodiversity Metric has been used to establish the existing features of the site and the habitats proposed as part of the Proposed Development.

4.69 Using the Illustrative Landscape Masterplan as an example of how the Proposed Development could be brought forward, an overall biodiversity net gain calculation has been undertaken for the Proposed Development. The calculation has assessed the value of the habitats within the site in its pre-development condition and compared this to a calculation of the same area with the post development proposals. The post development proposals are based on an interpretation of the Illustrative Landscape Masterplan, and so are not a definitive calculation of credits, but represent the potential for credits and gain that could be achieved.

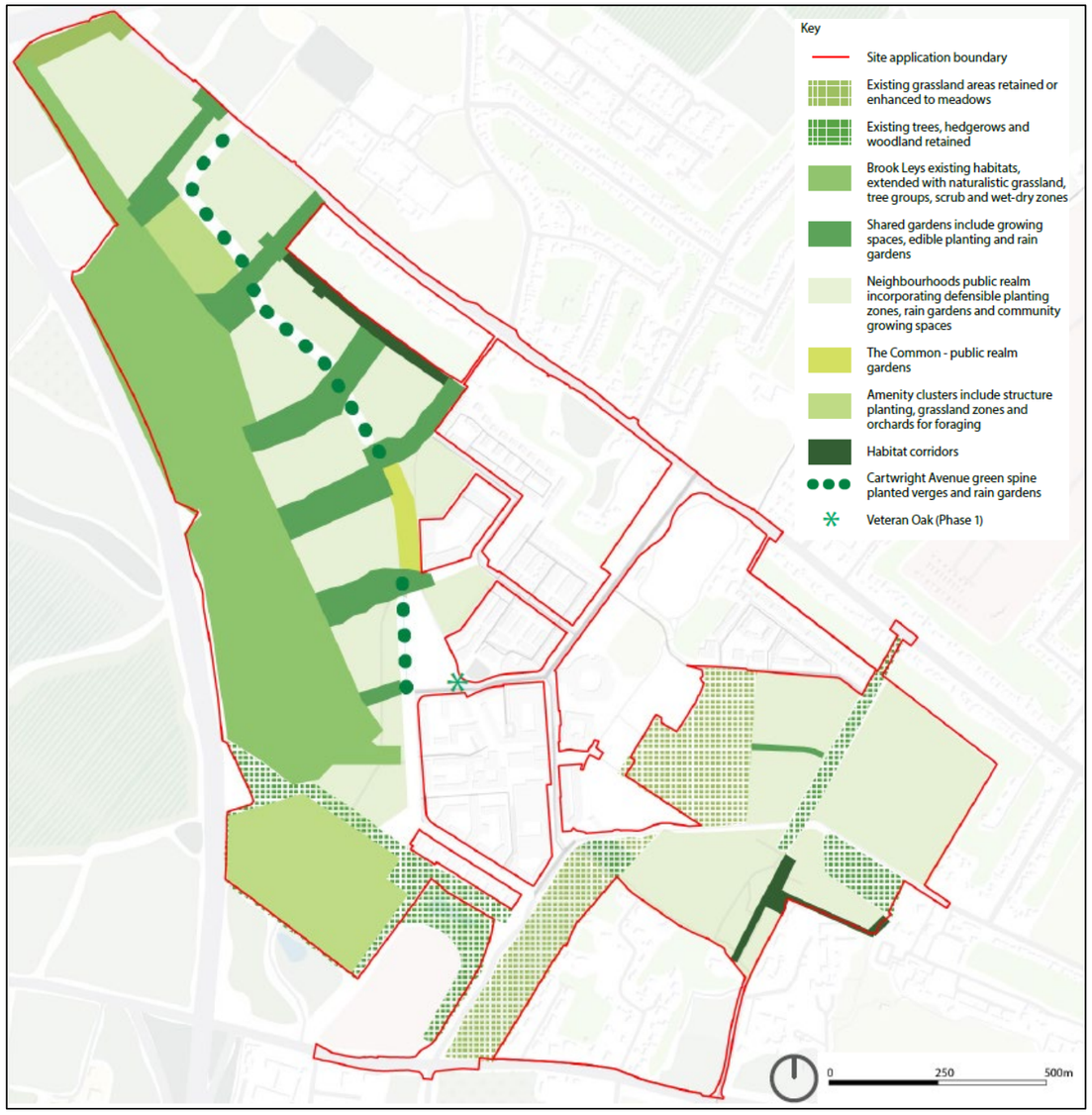
4.70 Based on the Illustrative Masterplan, the Biodiversity Net Gain Assessment presents a score of +18.70% in habitat units, +50.39% in linear units and +21.28% in watercourse units. These results demonstrate that the proposals can deliver a significant betterment for biodiversity compared to the existing site baseline.

4.71 Further details are provided within **ES Volume 1, Chapter 12: Ecology and Biodiversity** and within the Biodiversity Net Gain Assessment which is submitted in support of the OPA.

[7] *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 https://www.legislation.gov.uk/uksi/2017/571/schedule/4/made?view=plain*

[8] *Referring to the embedded mitigation of the works being sought for under the Detailed and Outline Planning Applications collectively.*

Figure 4.19 Biodiversity Strategy



Water Resources, Flood Risk and Drainage

4.72 A Flood Risk Assessment and Surface Water Drainage Strategy (**ES Volume 3, Appendix: Water Resources, Flood Risk and Drainage – Annex 4)** has been prepared for the site which provide proposals and commitments to be incorporated across the site to ensure that no significant effects in sensitive receptors occur as a result of the Proposed Development.

4.73 The site is located largely located within Flood Zone 1. Typically, areas within Flood Zone 1 have a less than 0.1% chance of flooding from rivers or the sea in any given year. There is a small area of the site adjacent to the Washpit Brook which is in Flood Zone 2 which has between a 1% and 0.1% chance of flooding from rivers.

4.74 A Flood Alleviation Scheme (FAS) has been implemented within the site as part of Phase 1 of the 2013 OPP to ensure that the completed development in its entirety does not result in increased flooding within the Washpit Brook catchment and offer an amount of reduced flood risk downstream. The FAS still provides sufficient protection and will ensure that the Proposed Development (in combination with Phase 1 of the 2013 OPP) will not increase flood risk on the site.

4.75 The Surface Water Drainage Strategy, as illustrated in Figure 4.20, proposes to discharge to the Washpit Brook at greenfield runoff rates (2 litres / second / ha for up to 1 in 100-year +40% climate change rainfall event). Surface water runoff from individual plots will be attenuated and restricted to greenfield runoff rates before discharging into the sitewide drainage network. Surface water attenuation will be provided on-plot and across the sitewide drainage network to limit the surface water run-off up to 1 in 100-year storm event plus 40% climate change allowance.

4.76 It is proposed that all rainwater falling on the roofs of buildings will be captured, stored and redistributed to serve the non-potable demand requirements of the development. All other rainwater which falls on impermeable areas will be captured, treated, attenuated and conveyed to the Washpit Brook via a cascading network of SuDS.

4.77 Residential uses across the Proposed Development will meet the water consumption target of achieving mains water consumption of 80 litres or less per head per day. This will be achieved through water efficient fittings and water recycling. Non-domestic new buildings will be required to meet BREEAM 5/5 Wat01 credits through installing water efficient sanitaryware and water recycling.

Energy Strategy

4.78 An Energy Strategy has been prepared to accompany the OPA as a standalone report. The strategy examines the relevant energy policies and targets that the Proposed Development considers and provides a preliminary assessment of the predicted energy demand and predicted carbon dioxide (CO_2) emissions of the Proposed Development.

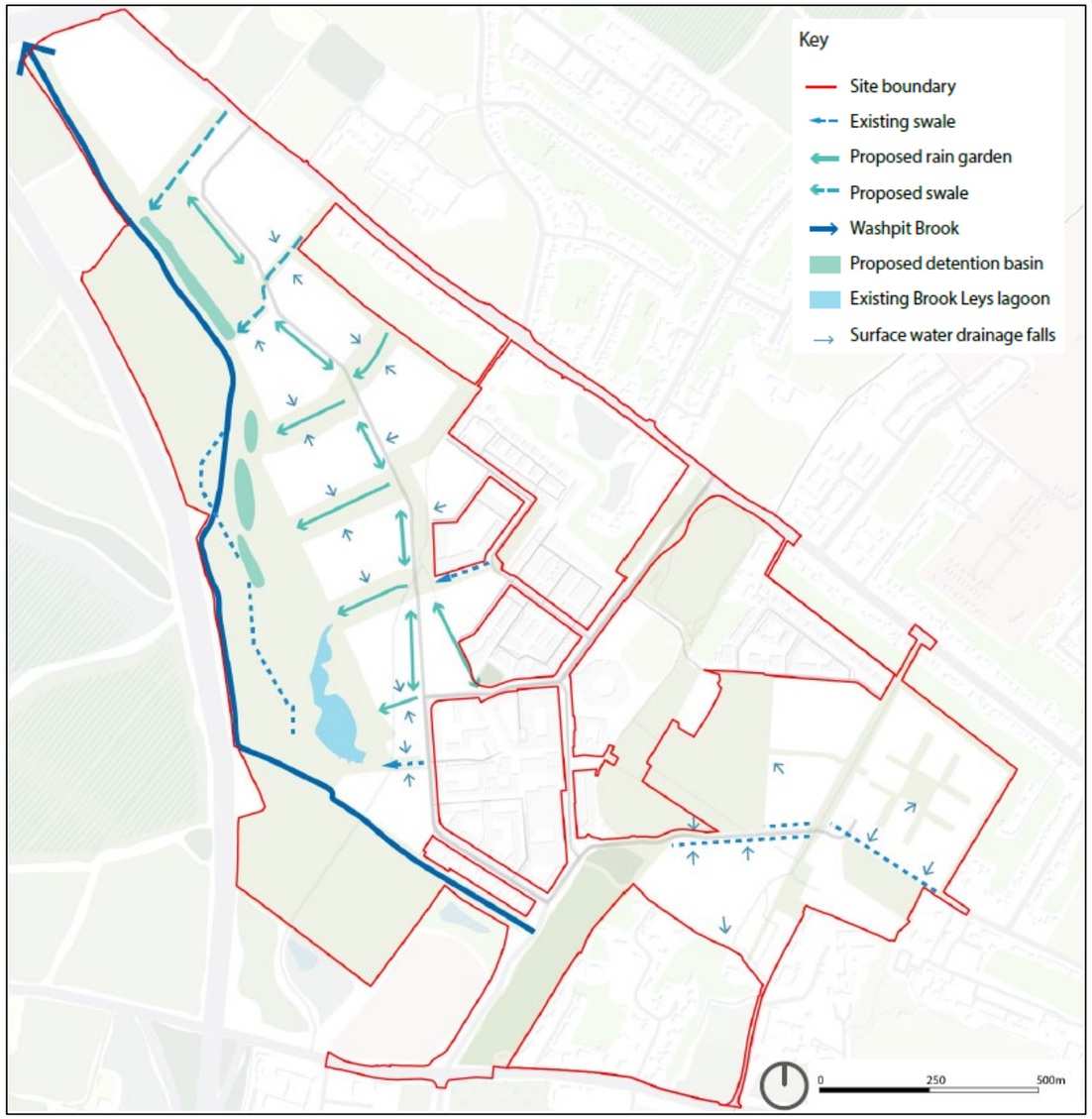
4.79 The proposed energy strategy has been developed in line with Policy 28 'Carbon Reduction, Community Energy Networks, Sustainable Design and Construction and Water Use' of the Cambridge Local Plan (2018), Policy CC/1 of the South Cambridgeshire Local Plan (2018), as well as the North West Cambridge AAP (2009). The proposed energy strategy follows the energy hierarchy, on the basis that it is preferable to firstly minimise carbon dioxide emissions through reduced energy demand.

4.80 An all-electric heating strategy is proposed. The preferred energy strategy utilises individual Air Source Heat Pumps (ASHPs) for dwellings and a local heating network supplied by building-mounted ASHPs for apartments. On-site renewable energy generation will be maximised by utilising the available flat roof space for apartments and non-domestic buildings and suitably oriented pitched roofs on houses for solar photovoltaic (PV) panels

4.81 The building services will include energy efficient lights, optimised heat distribution and mechanical ventilation with heat recovery.

4.82 As a result of this energy strategy, on-site carbon emission reduction associated with the high-level design information available at this stage is estimated to be a 52% saving against Building Regulations Part L 2021. Further detail will be provided at the RMA stages.

Figure 4.20 Surface Water Drainage Strategy



Waste Management and Storage

4.83 An Operational Waste Management Plan has been prepared to accompany the OPA. Within the Proposed Development, residential waste will be managed in accordance with the following guidance:

- Household Waste and Recycling Policies and Procedures (2023)[9];
- RECAP Waste Management Design Guide: Supplementary Planning Document (2012)[10];
- RECAP Waste Management Design Guide (2012)[11]; and
- RECAP Waste Management Design Guide Toolkit (2021)[12].

Residential Waste Management

4.84 Based on the Illustrative Masterplan, it is predicted that the Proposed Development will produce 1,146,053 litres per week of residential waste (556,870 litres of residual waste, 566,870 litres of dry-mixed recycling (DMR) and 12,313 litres of food waste).

4.85 Residents of the Proposed Development will be provided with access to Underground Refuse Storage (URS) units to deposit their residual waste and DMR. Residual waste and DMR will be stored in 5,000-litre URS units within the external landscaping, and food waste will be stored in 240-litre wheeled bins within dedicated external housings adjacent to the URS units. The URS units and external housings will be distributed throughout the Proposed Development, positioned to meet the needs of residents without impeding vehicle or servicing access and maintaining pedestrian safety.

4.86 On nominated collection days the Greater Cambridge Shared Waste Service (GCSWS) URS collection vehicle will access the URS units to collect the residual waste and DMR.

4.87 As per the guidance, the URS collection vehicle will not be required to perform any reversing manoeuvres to service the Proposed Development. All URS units will be accessible by the Refuse Collection Vehicle (RCV) in a forward gear.

4.88 All plots have been designed to provide a secondary route out of the plot should the collection vehicle be occupying the exit route.

4.89 For residential food waste collections, the GCSWS waste collection operatives will access the bins from the external housings and wheel them to the RCV. Once the bins have been emptied, the operatives will return them to their respective collection positions.

Commercial Waste Management

4.90 Based on the maximum quantum of commercial floorspace, the commercial elements of the Proposed Development are predicted to produce approximately 277,500 litres per week of waste (69,375 litres of residual waste, 194,250 litres of DMR and 13,875 litres of food waste).

4.91 All commercial waste facilities will be designed to British Standard BS5906:2005 Waste Management in Buildings – Code of Practice standards.

4.92 Commercial tenants will provide temporary internal waste storage within their commercial area that allows for the segregation of waste at source.

4.93 The commercial tenants in each building will be provided with access to shared commercial waste stores at ground level. The commercial waste stores are the locations that all commercial residual waste, DMR and food waste generated within the Proposed Development will be stored prior to collection.

4.94 As necessary, the commercial tenants will transfer the segregated waste from their temporary internal waste storage to the nearest commercial waste store. As a minimum, the commercial waste stores will be sized to accommodate a minimum of two days' waste storage. The appointed commercial waste contractors will collect the bins directly from each of the commercial waste stores on an agreed schedule.

[9] *Greater Cambridge Shared Waste Service, Household Waste and Recycling Procedures (2023).*
[10] *Cambridge City Council and Peterborough City Council, RECAP Waste Management Design Guide: Supplementary Planning Document (2012).*
[11] *Cambridge City Council and Peterborough City Council, RECAP Waste Management Design Guide (2012).*
[12] *Cambridge City Council and Peterborough City Council, RECAP Waste Management Design Guide Toolkit (2012).*

Chapter 5: Enabling, Demolition and Construction

TRIUM

INTRODUCTION

5.1 This chapter of the ES provides a description of the enabling, demolition and construction works and the anticipate programme of works for the purposes of identifying and assessing the potential enabling, demolition and construction related environmental impacts and resultant environmental effects of the Proposed Development. The assessment of these impacts and effects is reported within each technical topic chapter of this ES (**ES Volume 1, Chapters 6 to 15** and **ES Volume 2**). This chapter does not assess the magnitude of potential impacts, nor the scale and significance of likely effects during the demolition and construction works, as noted above this is addressed elsewhere in the ES (**ES Volume 1, Chapters 6 to 15** and **ES Volume 2**).

5.2 Planning for construction is broad at this stage in the planning process and may be subject to modification during the detailed planning of these works, particularly following the appointment of a Principal Contractor(s) and throughout preparation of various Construction Method Statements (CMS) and supporting management plans. The information presented within this ES chapter is therefore based on reasonable assumptions made by the Applicant and the wider planning and design team. It is also considered robust for the purposes of the Environmental Impact Assessment (EIA) in defining a reasonable worst-case scenario for the purposes of assessment and any non-material changes to the timings of works is not considered likely to affect the findings and conclusions of the technical assessments.

5.3 Various environmental management measures will form the basis of a Construction Environmental Management Plan (CEMP) that will be implemented over the duration of construction works. An Outline CEMP has been prepared in support of the planning application. It is anticipated that the preparation of a detailed CEMP will be conditioned and prepared (alongside any other required management plans) prior to any works on-site starting, in agreement with the Greater Cambridge Shared Planning Service (GCSPS). Construction related environmental management, mitigation and monitoring measures identified as being required as part of the Environmental Impact Assessment (EIA) are described within **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule**.

5.4 **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule** and the CEMP prepared post determination will define, amongst other things, the hours of operation, dust control measures, vehicle emission controls, a schedule of all plant, non-road and road mobile vehicles. In addition to the environmental management measures and procedures (such as noise control and protection of ecology), consideration shall also be given to construction materials quantities and best practice environmental standards for construction sites.

5.5 It is anticipated that the implementation of the CMS, Demolition Method Statement (DMS) and CEMP in addition to a Site Waste Management Plan (SWMP), Construction Traffic Management Plan (CTMP) and any other required management plans (e.g. Dust Management Plan) will be secured through appropriately worded planning conditions. It is intended that the CEMP (and other plans, as relevant) will be 'live working' documents, and that the Principal Contractor(s) appointed representative will update the documents according with any amended construction environmental management measures as the scheme progresses through to detailed design and construction. The site will be registered with the UK's Considerate Contractor Scheme.

BASIS OF ENABLING, DEMOLITION AND CONSTRUCTION INFORMATION

5.6 To enable the assessment of the likely significant environmental effects associated with the construction of the Proposed Development an indicative, but feasible, enabling, demolition and construction programme has been developed by the Applicant based on maximum parameter plans.

5.7 Given the outline nature of the planning application, basing the enabling, demolition and construction information that informs the enabling demolition and construction impact assessments on the maximum quantum of development and Land Use Parameter Plan (Drawing No. PP5-10005) allows for a reasonable assessment of these works, as the information is based on a maximum amount of development that could be brought forward on the site and the location of various land uses proposed. It also reflects a reasonable worst-case assessment for the EIA alongside which the detailed design of the Proposed Development via future Reserved Matters Applications (RMAs) can be brought forward. Certain elements of demolition and construction information such as: details on construction methodology; hours of work; access routes; likely construction activities; and likely equipment used, would not alter or materially change as a result of the final scheme which would be built-out under the planning application and associated RMAs.

5.8 Detailed information on the quantities of construction materials required to construct the Proposed Development is not typically available at this stage in the planning process (i.e. outline planning application stage). In order to quantify the construction materials for the purpose of informing the assessments within this ES, worst-case estimates have been used which have been informed by the maximum parameters within the Development Specification and Proposed Maximum Heights Parameter Plan (PP7-10007). The construction quantities provided in Table 5.8 are estimates and the exact construction quantities will be determined at the RMA stage, and will form part of the CEMP once prepared, in advance of any works being undertaken on site.

ANTICIPATED WORKS AND PROGRAMME

Summary of Anticipated Works

5.9 It is likely that the Proposed Development will be constructed across three main development phases which are illustrated on Figure 5.1 below. Each phase is expected to comprise the following key activities:

- Enabling and groundworks;
- Demolition of buildings on site where required;
- Site preparation and construction of infrastructure;
- Construction of buildings and structures including (depending on the phase) residential, sports pitches, and mixed-use non-residential land use; and
- Fit out of properties and landscaping.

5.10 The Proposed Development forms part of a wider North West Cambridge Development Masterplan, Phase 1 of which has been constructed as part of separate planning application, and will be largely completed by commencement of works associated with this planning application. Therefore, the phasing numbering commences from Phase 2. Phase 2 to 4 are split to reflect the required infrastructure (pumping stations catchment areas) with Phase 2 further subdivided to allow for a more manageable delivery strategy.

Huntingdon Road Junction

5.11 Work will be required to form a new vehicle entrance onto Huntingdon Road (A1307). This will include updated to the cycling infrastructure and kerbs. The works will be undertaken under a Section 278 agreement with Highway Authority.

Cartwright Avenue

5.12 Installation of new road with associated kerbs, landscaping and below ground infrastructure is also proposed, known as Cartwright Avenue. Works will be undertaken progressively during construction, connecting onto the exiting Phase 1 roads and working towards Huntingdon Road Junction.

Programme

5.13 Enabling, demolition and construction works are anticipated to be delivered in phases over a 10-year period from commencement of construction anticipated to be in 2027 (Year 1) until 2037 (Year 10). An indicative enabling, demolition and construction programme is provided below in Figure 5.2 of this ES chapter. Each phase is anticipated to be built in line with the development trajectory shown in Table 5.1.

Table 5.1 Construction Phases

Phase	Plots	Duration (Months)	Start Date	End Date
Infrastructure	Site-wide	75	Q4 2026	Q1 2033
Phase 2A	G, F2 and F3	26	Q2 2027	Q2 2029
Phase 2B	F1, E1 and E2	39	Q4 2028	Q1 2032
Phase 2C	C1, D1 and D2	36	Q4 2030	Q4 2033
Phase 3	A, B1, B2 and C2	28	Q4 2032	Q1 2035
Phase 4	H1, H2, H3 and J	56	Q3 2032	Q1 2037

5.14 The indicative demolition and construction programme has been produced by an experienced construction manager and is representative of a programme that is reasonable and achievable, based upon the information available at the time of preparing this ES. The programme presents the likely sequence of activities and is based on reasonable assumptions in terms of the sequencing of works and site logistics. It is considered robust for the purposes of the EIA in defining a reasonable worst-case scenario for the purposes of assessment and any non-material changes to the timings of works is considered unlikely to affect the technical assessments.

Figure 5.1 Indicative Proposed Development Phase Layout

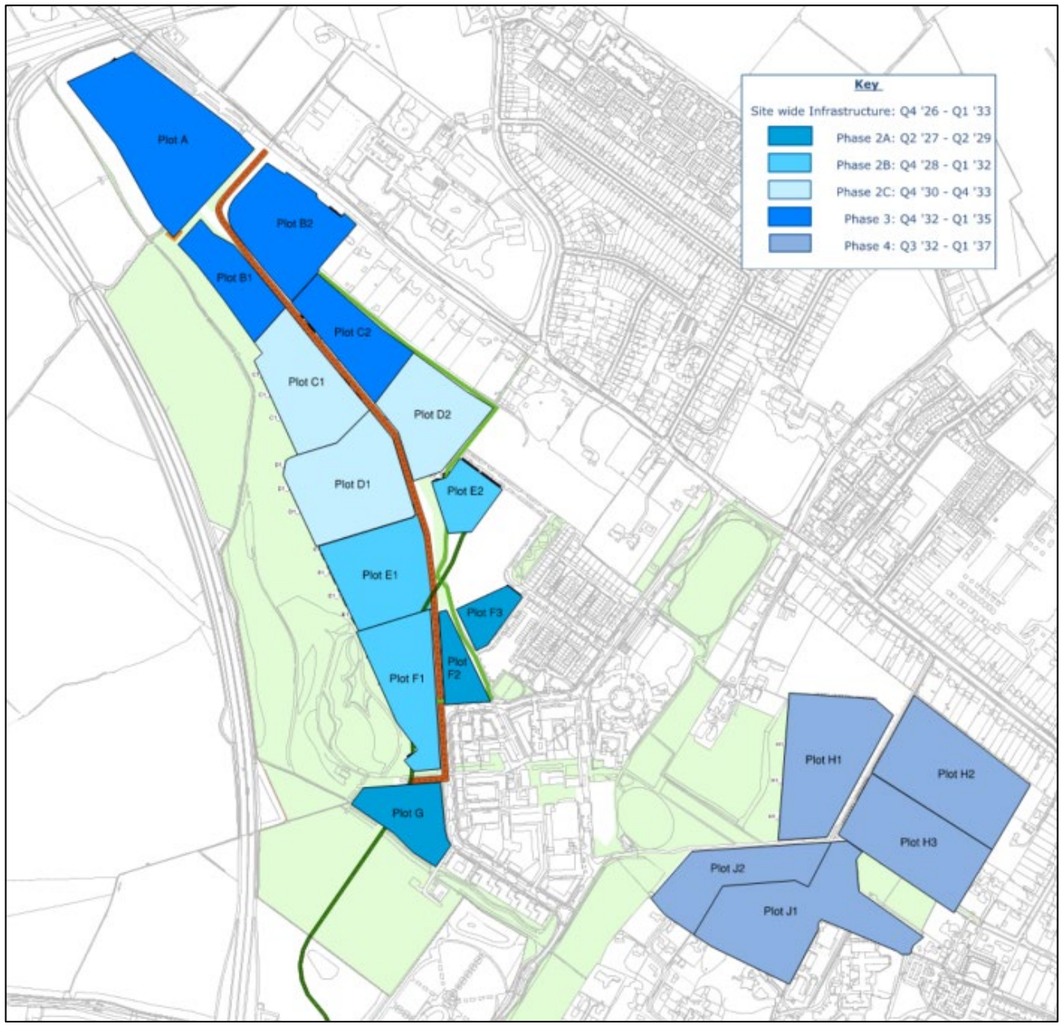


Figure 5.2 Indicative Enabling, Demolition and Construction Programme

Activities	2026				2027				2028				2029				2030				2031				2032				2033				2034				2035				2036				2037			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Phase 2 & 3 Infrastructure																																															
Earthworks Phase 2 & 3																																															
Huntingdon Road Junction Construction																																														
Cartwright Avenue																																														
Pumping Station A - Phase 2B																																														
Plot A Demolition																																														
Pumping Station B - Phase 3																																														
Phase 4 Infrastructure																																														
Phase 4 Demolition																																														
Earthworks Phase 4																																														
Pumping Station C																																														
Utility connections, Highways & Cycle Lanes																																														
Phase 2A																																														
Plot F3																																														
Plot F2																																														
Plot G																																														
Plot K (Amenity Clusters C)																																														
Phase 2B																																														
Plot F1																																														
Plot E1																																														
Plot E2																																														
Phase 2C																																														
Plot D1																																														
Plot D2																																														
Plot C1																																														
Phase 3																																														
Plot C2																																														
Plot B2																																														
Plot B1 (Amenity Clusters D)																																														
Plot A																																														
Phase 4																																														
Plot J1																																														
Plot J2																																														
Plot H1																																														
Plot H2																																														
Plot H3																																														

DESCRIPTION OF WORKS

5.15 An indicative description of the method for the enabling, demolition and construction works is provided below and provides a reasonable basis of assessment for the EIA. A detailed methodology of these works will be set out in the final CEMP prior to these works commencing.

Enabling, Site Preparation and Groundwork

5.16 On commencement of the development, the first exercise will be to prepare the site to enable the construction of the main infrastructure. This will involve the removal of the organic layer (topsoil) which will be set aside for re-use in appropriately manged stockpiles. Any excess will be screened and graded for export for re-use on another project. Topsoil removal will be carried out in phases to ensure that the underlying sub-soil is not exposed to weathering impacting on its suitability for future construction.

5.17 The main enabling works will include, but will not be limited to:

- Surveys, investigations and consents / licenses;
- Huntingdon Road Junction construction and relative highway modifications;
- Installation of site hoarding;
- Set up and establishment of site office and welfare facilities
- Utility diversions and removal (where required); and
- Installation of pumping stations.

Surveys, Investigations and Consents / Licenses

5.18 Several surveys and investigations will need to be undertaken prior to the commencement of works on site for each phase as identified below, although it is likely that some of the surveys and investigations will need to be undertaken once the construction site is fully established to facilitate ease of access to the site for exploratory purposes. The following surveys and investigations could include, but are not limited to:

- Ecological surveys to facilitate site clearance;
- Geotechnical and contamination surveys and remediation;
- Unexploded ordnance; and
- Asbestos surveys of the buildings to be demolished (after full vacant possession).

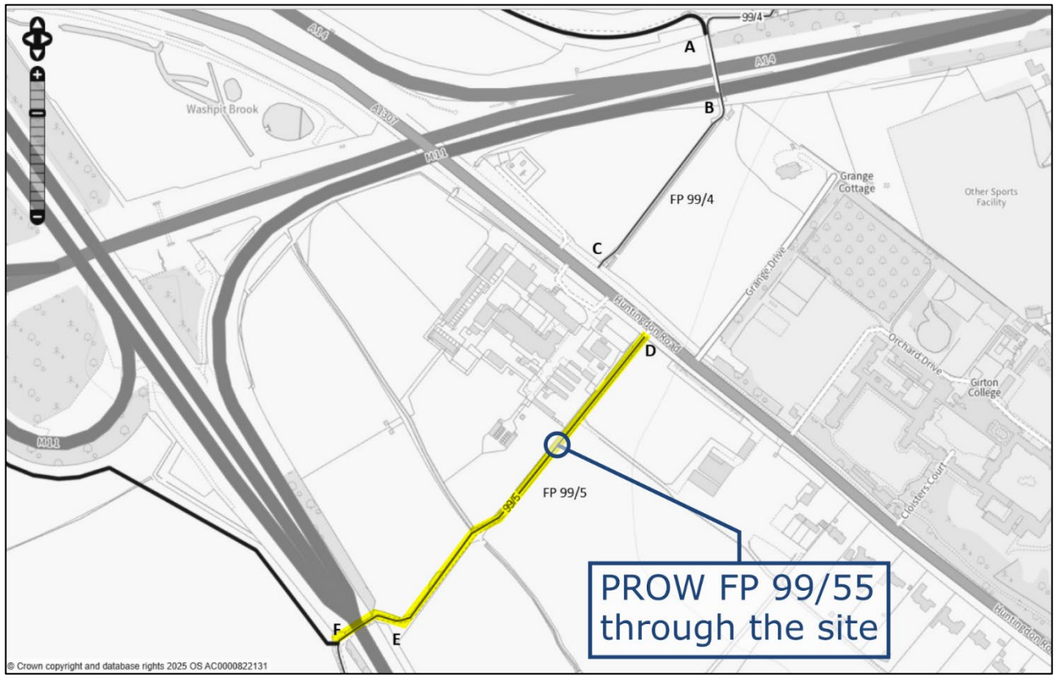
5.19 All statutory, Local Planning Authority (LPA) consents and licences required to commence any on site activity will also be obtained ahead of the works commencing including the appropriate notice period. Applications will include but not necessarily be limited to:

- A works license for any works on the public highway will be entered into for works on the existing highway in accordance with the Highways Act 1980 and Road Traffic Act 1998;
- Hoarding and scaffold licenses for works on the perimeter boundary;
- Public Right of Way temporary diversions, which will be locally diverted at various stages of the enabling and construction programme to facilitate construction and to maintain public health safety;
- Submission and approval from the Lead Local Flood Authority (LLFA) for the surface water drainage design for the site;
- Ordinary water consents and environmental permitting to be obtained for any works associated with the watercourses (i.e. drainage outfalls etc.).

5.20 There is an existing Public Right of Way (PRoW) located in the north-west of the site, across Plot A, which will need to be temporary diverted during the enabling works and final landscaping works. Temporary controlled vehicle crossing will need to be formed to all the development of Plot A.

5.21 Permission to temporarily divert existing Girton Public Footpath 5 (99/5), as shown in Figure 5.3, where required for construction activities will be the responsibility of the Principal Contractor(s) to secure and will be subject to approval from Cambridgeshire County Council (CCoC). Request for temporary diversions and the duration of each diversion will be confirmed with CCoC prior to construction activities commencing for each development phase. Once construction activities are completed access to the PRoW will be reinstated along its existing alignment.

Figure 5.3 Public Rights of Way Plan[1]



Site Establishment, Hoarding, Site Office and Welfare Facilities

5.22 Construction site areas will be made safe and secure prior to works commencing and the general public will be separated from the works, with the use of solid and well maintained, 2.4m high hoardings. Secure access points with wheel cleaning facilities will be established at all site access and egress locations. Pedestrian access points for operatives will generally be located close to the main vehicular access gates with separate pedestrian gates and footpaths provided. Public access to neighbouring buildings will be safeguarded and will be entirely separate from construction areas.

5.23 For the infrastructure and enabling phase of the works, a traditional arrangement of temporary site set up is anticipated utilising portacabins. Temporary utility connections would be made to existing utility services for temporary accommodation and for construction use where no existing connections exist.

5.24 Following completion of the enabling works, good quality welfare facilities will be provided on the site including, toilets, washing and changing facilities, and canteen with a kitchen. All Principal Contractors will be responsible for maintaining adequate provision for each development plot within the agreed plot specific boundaries. Where

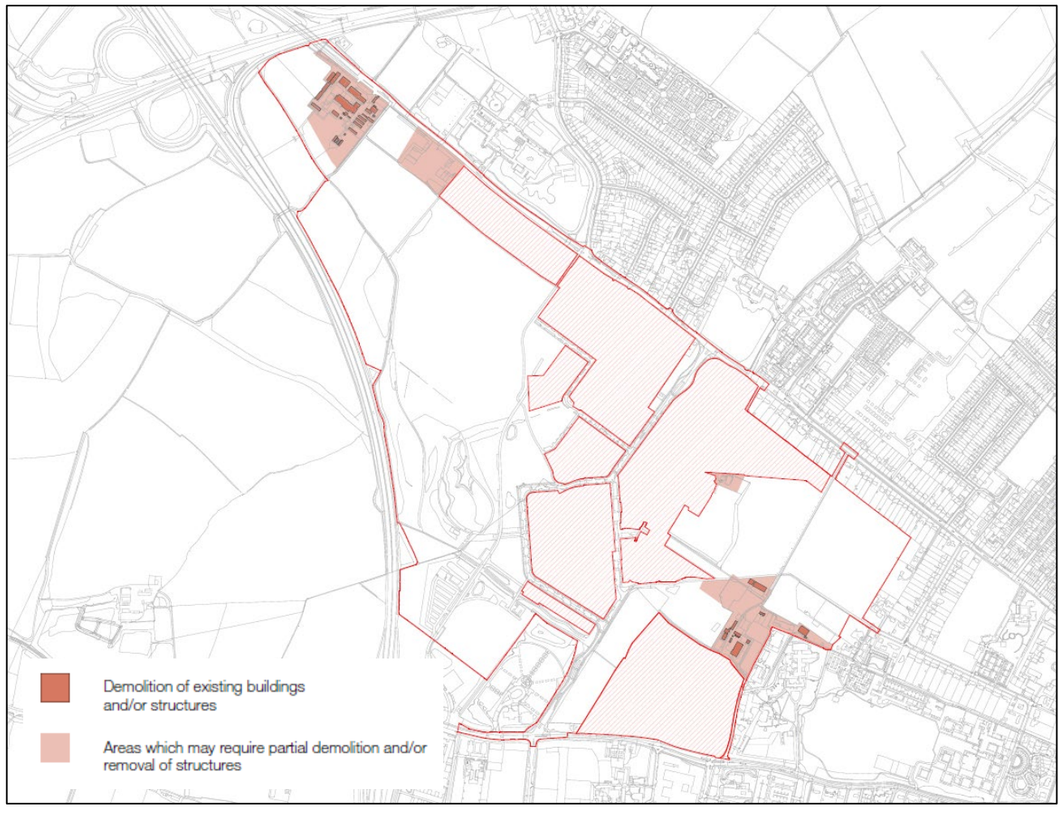
[1] *Girton Public Footpath 5 (99/5) highlighted yellow*

possible, a centrally located facility supplemented by satellite facilities and plot specific facilities will be provided to consolidate welfare requirements. A detailed layout of these facilities will be set out in the final CEMP prior to the works commencing.

Demolition of Existing Structures

5.25 There are three main areas of demolition in Phase 3 and Phase 4 as show in Figure 5.4.

Figure 5.4 Existing Buildings to be Demolished



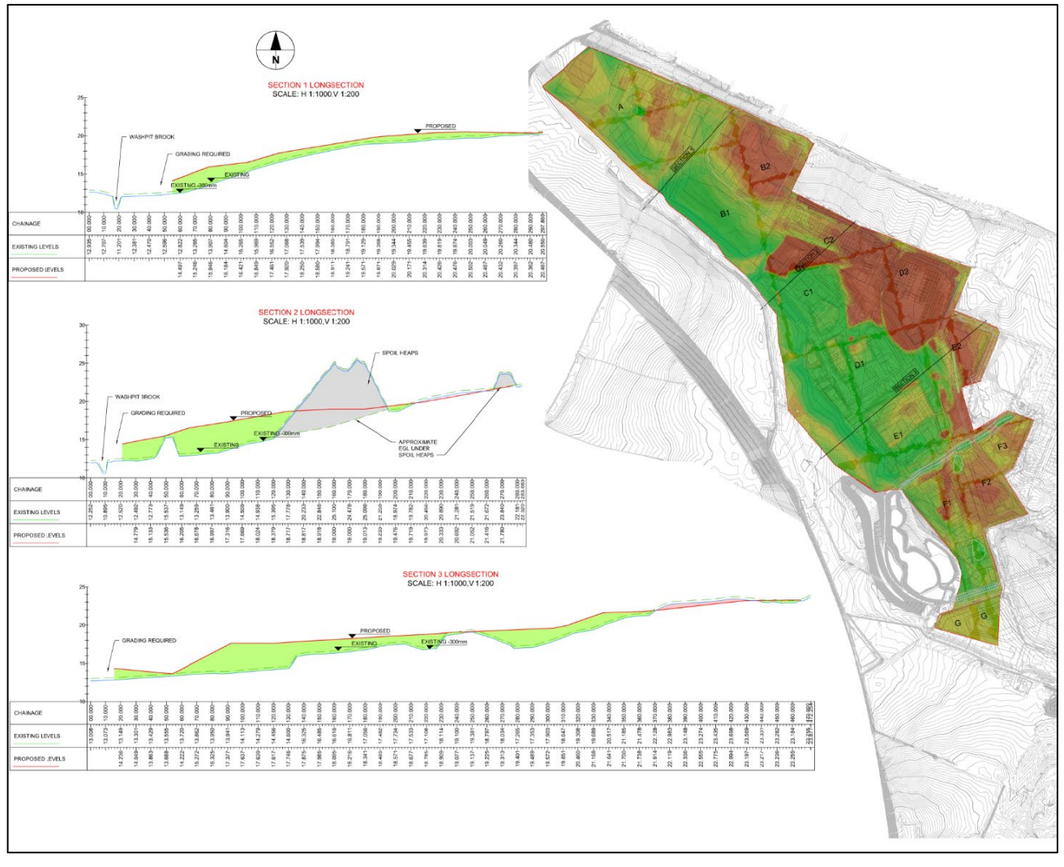
5.26 It is intended that the following methodology would be adopted to minimise the potential impacts associated with the demolition works, along with any other necessary environmental procedures to ensure the highest level of environmental control is achieved:

- Buildings are likely to be demolished using long reach mechanical plant incorporating breakers and crunchers working from inside the site boundary;
- Plant used for demolition will be selected to minimise noise and dust production;
- Demolition on any road boundaries or boundaries with exiting occupied properties will principally be carried out by hand or remote-controlled breakers from the perimeter scaffolds which will allow for screening and the control of dust;
- Localised water/mist systems will be used at the point of origin during demolition activities and processing areas to suppress and reduce the generations and/or migration of airborne dust;
- Opportunities will be explored for the recycling of concrete on-site to form the pilling mats and ramps. This method will reduce the number of Heavy Good Vehicle (HGV) movements into and around the site during the works;
- During the works, noise, dust, and vibration levels will be monitored from various locations around the site and results analysed to ensure that the agreed levels are not exceeded; and
- Baseline noise and vibration readings will be carried out during the site surveys to determine background readings and assist in the location of monitors to minimise disruption to key receptors.

Site Excavation

5.27 The exact method proposed for site excavation will be determined by the Principal Contractor, once appointed, ahead of any works being undertaken on site. It is anticipated that the excavation will be carried out using different types and sizes of excavators, including but not limited to backactors, bulldozers and graders. The works will be closely monitored by a surveyor to ensure that the required formation level is reached and no over excavation occurs. It is anticipated that excavated materials shall be hauled and stored at a dedicated stockpile area. The CMS' for the RMA stages of the Proposed Development will detail the site excavation method. Figure 5.5 shows the indicative areas of excavation, as well as the areas to be infilled across the site.

Figure 5.5 Sitewide Cut and Fill Strategy



5.28 There are residual stockpiles from the Phase 1 cut and fill works that remain on site. Suitable material from these stockpiles will be re-used subject to material testing and validation of quality and suitability.

5.29 A site wide cut and fill assement has been udertaken, as summarised in Table 5.2 for soils and Table 5.3 for clay and fill material below. The assessment has indicated 172,000m^3 of Topsoil / Subsoil material will be removed from site. There will be a further 25,000m^3 of material to be removed for the provision of attenuation tanks on the plots.

Table 5.2 Extract from Cut and Fill Assessment for Topsoil and Subsoil

Item	Volume (m^3)
Phase 2 (including Brook Leys)	+88,000
Gravel Hill	+33,500
Phase 4	+51,000
Stockpiles (Topsoil and Subsoil)	+72,500
Brook Leys Dressing	N/A
Brook Leys Deposition	-72,500
TOTAL Off-site Disposal	**+172,000**

Table 5.3 Extract from Cut and Fill Assessment for Clay and Fill Materials

Item	Volume (m^3)
Stockpiles	+205,000
Cartwirght Avenue Road Box	+7,000
Brook Leys Deposition	0
Site Platforming	-212,000
TOTAL	**0**

Construction Works

5.30 There are three types of building assumed for the Proposed Development subject to the detailed design development:

- **Homes** – 2 to 3 storey dwellings assumed to be constructed traditionally with brick facades and pitched roofs. The construction methodology for these residential buildings is shown in Table 5.4;
- **Apartments / Flats –** 3 plus storeys residential buildings assumed to be reinforced concrete frames, Metsec façade with brickwork and flat roofs. The construction methodology for these residential buildings is shown in Table 5.5; and
- **Commercial Buildings** – assumed to be reinforced concrete frame construction. The construction methodology for commercial buildings is shown in Table 5.6.

Table 5.4 Construction Methodology (Homes)

Construction Stage	Description	Deliveries
Site Setup	Following vacant possession, establishment of security measures and hoarding. Survey works as required for design and demolition. Excavation and ground investigations.	• Materials of hoarding • Equipment for survey works • Welfare and security cabins • Plant deliveries
Foundations and Substructure	Piled foundation installation and associated concrete works, assumed to be Continuous Flight Auger (CFA) or rotary piles at this stage. Pile caps and ground floor slab construction.	• Concrete • Removal of spoil • Reinforcement • Timber plywood
Superstructure	Timber frames / floors with steel transfer beams and blockwork / brickwork walls.	• Steelwork • Scaffolding • Ancillaries • Timber • SIPs panels (if detailed)
Cladding and Roofing	Installation of brickwork façade, windows and doors. Pitched roofs using roof tiles	• Façade materials • Glazing • Roofing material • Insulation
MEP	Installation of services to each unit, note, substations where required are located in the blocks.	• Pipework • Insulation/ lagging • Plaster board • Stone • Fill material • Stones / paving • Plants and trees • Insulation

Table 5.5 Construction Methodology (Apartments / Flats)

Construction Stage	Description	Deliveries
Site Setup	Following vacant possession, establishment of security measures and hoarding. Survey works as required for design and demolition. Excavation and ground investigations.	• Materials of hoarding • Equipment for survey works, • Welfare and security cabins • Plant deliveries
Foundations and Substructure	Piled foundation installation and associated concrete works. Pile caps and ground floor slab construction.	• Concrete • Removal of spoil • Reinforcement • Timber plywood
Superstructure	Concrete column and beams with reinforced concrete slab. Steelwork balconies installed. Installation of residential modules (subject to design).	• Concrete • Reinforcement • Steelwork • Temporary propping • Ancillaries • Timber
Cladding and Roofing	Installation of brickwork façade, glazing. Insulation and waterproofing of roof to achieve weather tightness.	• Façade materials • Glazing • Roofing material • Insulation
MEP	Installation of risers and MEP primary plant, riser distribution pipework, to each floor and core, from either ground level or from roof. Installation of lifts.	• Pipework • Insulation/ lagging • Plaster board • Stone • Lift ancillaries • Fill material • Stones / paving • Plants and trees • Insulation

Table 5.6 Construction Methodology (Commercial Buildings)

Construction Stage	Description	Deliveries
Site Setup	Following vacant possession, establishment of security measures and hoarding. Survey works as required for design and demolition. Excavation and ground investigations.	• Materials of hoarding • Equipment for survey works, • Welfare and security cabins • Plant deliveries
Foundations and Substructure	Piled foundation installation and associated concrete works, assumed to be CFA or rotary piles at this stage. Pile caps and ground floor slab construction.	• Concrete • Removal of spoil • Reinforcement • Timber Plywood
Superstructure	Concrete column and beams with reinforced concrete slab. Steelwork mezzanine installed.	• Concrete • Reinforcement • Steelwork • Temporary propping • Ancillaries • Timber
Cladding and Roofing	Installation of brickwork façade, glazing. Insulation and waterproofing of roof to achieve weather tightness.	• Façade materials • Glazing • Roofing materia • Insulation
MEP	Installation of risers and MEP primary plant, riser distribution pipework, to each floor and core, from either ground level or from roof. Installation of lifts.	• Pipework • Insulation/ lagging • Plaster board • Stone • Lift ancillaries • Fill material • Stones / paving • Plants and trees • Insulation

Fit Out and Landscaping

5.31 Following the achievement of water tightness, fit out works would commence with builders work holes, installation of drainage stacks, floor screening, if required, and internal partitions and walls.

5.32 Electrical and plumbing services would then proceed followed by boarding to walls and ceilings and plastering ready for kitchen and bathroom installation, floor and wall finishes and joinery. Decoration and final activities would then follow. Installation of passenger lifts would commence following the completion and acceptance for formed lift shafts.

5.33 Roof level plant will be placed using mobile cranes.

5.34 The landscaping will be constructed in a similar phasing strategy to the associated building works and would generally take place in the last six months of the adjacent building construction.

5.35 Similarly, the landscaping of the adjacent open spaces would be phased to complete at the same time as the adjacent building(s). External landscaping works will also include the completion of any associated temporary or permanent vehicle, pedestrian, or cycle routes through the Proposed Development. The works may be constrained to agreed temporary routes to suit the ongoing phasing and handover of the works areas.

5.36 Temporary landscaping and boundaries will be provided to separate completed buildings and public realm from ongoing construction works at the end of each phase.

CONSTRUCTION RELATED MITIGATION FOR EIA

5.37 For the purposes of the technical assessments provided as part of this ES, the following construction related mitigation measures are taken as 'embedded' and so factored into the technical assessments to define the potential for likely significant effects. All other construction related mitigation that has been identified as being required to reduce the scale and so significance of residual effects or render residual effects insignificant is 'additional mitigation' and is presented in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule**:

- A CMS providing details for how demolition and construction vehicles will be managed throughout the process and how any mitigation required will be implemented;
- A CEMP will be produced containing:
  - Dust management measures in accordance with the IAQM guidance[2] for sites at High risk of dust soiling;
  - Measures which would reduce the effects of construction on built heritage assets via limited noise and dust and restricted hours of work;
- Any asbestos-containing materials will be managed in accordance with The Control of Asbestos Regulations[3], which will prevent cross contamination of site soils during any demolition and construction works and protect workers from exposure to asbestos. Where required, materials would be handled by a specialist contractor;
- The use of protective sheeting on earth stockpiles and vehicles;
- Minimising vehicle speed on site;
- The cleansing of roads and tyres;
- Interceptor fencing and bunds, with all materials including fuels and oils stored in well-contained and secure areas; and
- To minimise lighting impacts during the demolition and construction works it is expected that lighting will be directional and avoid the use of white mercury vapour lamps.

5.38 Additionally, this also includes measures set out within the:

- The Control of Pollution Act (COPA) 1974[4] with particular reference to part III;
- The Environmental Protection Act 1990[5];
- The Control of Noise at Work Regulations 2005[6]; and
- The Health and Safety at Work Act 1974[7].

ESTIMATED DEMOLITION QUANTITIES

5.39 Table 5.7 provides an estimate of the quantities of material likely to be generated as a result of the demolition works. These quantities are indicative at this stage and will be further defined through a Pre-Demolition Audit, to be secured as a planning condition.

[2] *IAQM. (2016). Guidance on the assessment of dust from demolition and construction.*
[3] *HSE. (2012) Control of Asbestos Regulations 2012.*
[4] *UK Government, The Control of Pollution Act 1974*
[5] *UK Government, Environmental Protection Act 1990*
[6] *UK Government, Control of Noise at Work Regulations 2005*
[7] *UK Government, Health and Safety at Work etc. Act 1974*

Table 5.7 Demolition Quantities

Demolition Material	Demolition Quantities (Tonnes)
Concrete	24,657.9
Bricks	513.6
Mixed Metals	818.1
Timber	14.7
Tiles and Ceramics	7.3
"Gypsum based construction material"	7.3
Glass	3.7
Plastics	3.7
Bituminous Material (including tar)	9,286.4
Textiles	3.7
TOTAL	**35,316.2**

5.40 Subject to a pre-demolition audit being undertaken to identify materials for reuse it is currently assumed that any inert brickwork/ concrete material could be crushed and re-used in the formation of piling mats subject to appropriate testing.

ESTIMATED CONSTRUCTION QUANTITIES

5.41 Table 5.8 provides estimates of key construction materials associated with the construction of the Proposed Development.

Table 5.8 Estimates of Key Construction Quantities

Construction Materials	Quantities (m^2)	Quantities (m^3)	Quantities (Tonne)
Concrete	-	296,211	-
Reinforcement	-	-	38,782
Blockwork	165,330	7,620	-
Drylining	448,629	-	-
Façade Cladding and Glazing	602,053	-	-
Ceiling Finish	96,014	-	-
Roof Finishes	161,918	-	-
Floor Finishes	295,006	-	-
Structural Steel	-	-	1,115
Timber	102,091	-	-

CONSTRUCTION WASTE

Excavated Material

5.42 Table 5.9 shows the excavation waste estimates and recycling targets.

Table 5.9 Excavation Waste

Excavation Waste		Quantities (m^3)
Cut and Fill		172,000.00
Attenuation Tanks		25,000.00
Plot Foundations		170,000.00
TOTAL		**367,000.00**
Recycling Targets		
% Recycled	95%	348,650
% Residual	5%	18,350

5.43 Detailed cut and fill investigations and proposals will form part of the future RMAs. For the purposes of the EIA, the above quantity has been assumed for across all three main development phases.

5.44 Site-wide excavation would be required to re-grade the site, as well as to construct service trenches within the various phases. Substructure works will be carried out on a plot-by-plot basis in line with the phasing programme.

5.45 There is low risk of contamination on the site. If unexpected contamination is encountered during construction works then further Site Investigation works (SIs) may be required to delineate the contamination and a Remediation Strategy would be prepared in consultation with GCSP and the Environment Agency (EA), as relevant. Remediation works would then be undertaken in accordance with the Remediation Strategy and the results would be reported within an updated Verification Report.

Waste

5.46 Table 5.10 shows the construction waste estimates, which have been calculated using the British Research Establishment benchmark for 'Site Waste Produced from New Build Projects. It is anticipated that the Proposed Development would target 95% re-use / recycling / recovery of construction waste.

Table 5.10 Construction Waste

Construction Waste	GIA (m^2)	Residential Waste Benchmark ($m^3/100m^2$)	Waste Quantity (m^3)
Waste Generation	Up to 524,500	6.5	34,094

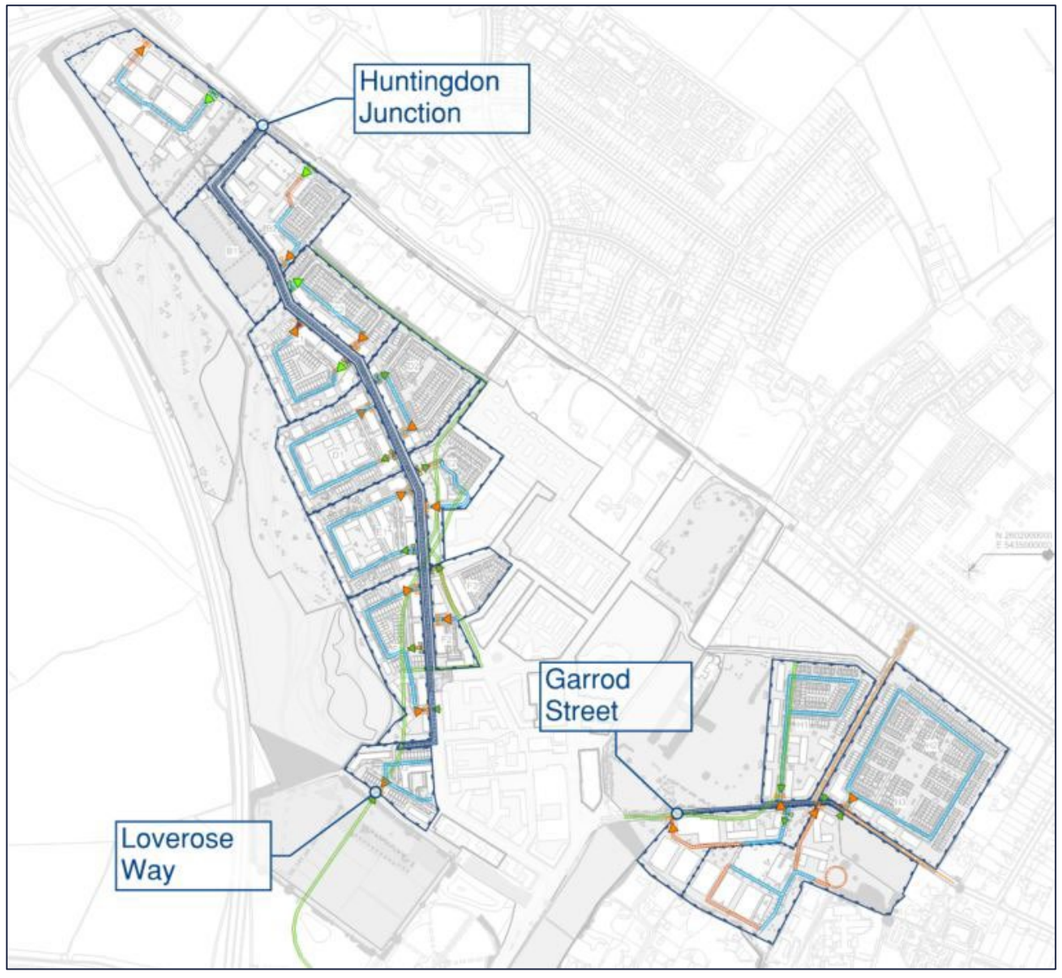
ROAD TRAFFIC

Site Access and Egress

5.47 There are three primary access points to the site, shown in Figure 5.6.

- Loverose Way (Existing Phase 1 Haul Road) – Accessed from Madingley Road (A1303);
- Cartwright Avenue (New Haul Road) – Accessed via Huntingdon Road Junction; and
- Garrod Street -- Accessed from Madingley Road (A1303).

Figure 5.6 Site Access Points



5.48 Construction vehicles will primarily access site from the Huntingdon Road Junction. Loverose Way will be used for Plots F2 and F3 until the construction of Plot G commences. Garrod Street will be used for the construction of Phase 4.

5.49 All operatives will be encouraged to use sustainable means of transport (i.e., public transport). Key transport nodes for operatives arriving by public transport and foot are shown in Figure 5.7 and are as follows:

- Train Stations – Cambridge, and Cambridge North Train Station
- Nearby Bus Stops – Girton Road and Madingley Road Park and Ride.

5.50 The use of bicycles as a form of transport will be encouraged, with bicycle storage and shower facilities made available on-site. Generally, this will be adjacent to the site welfare compounds.

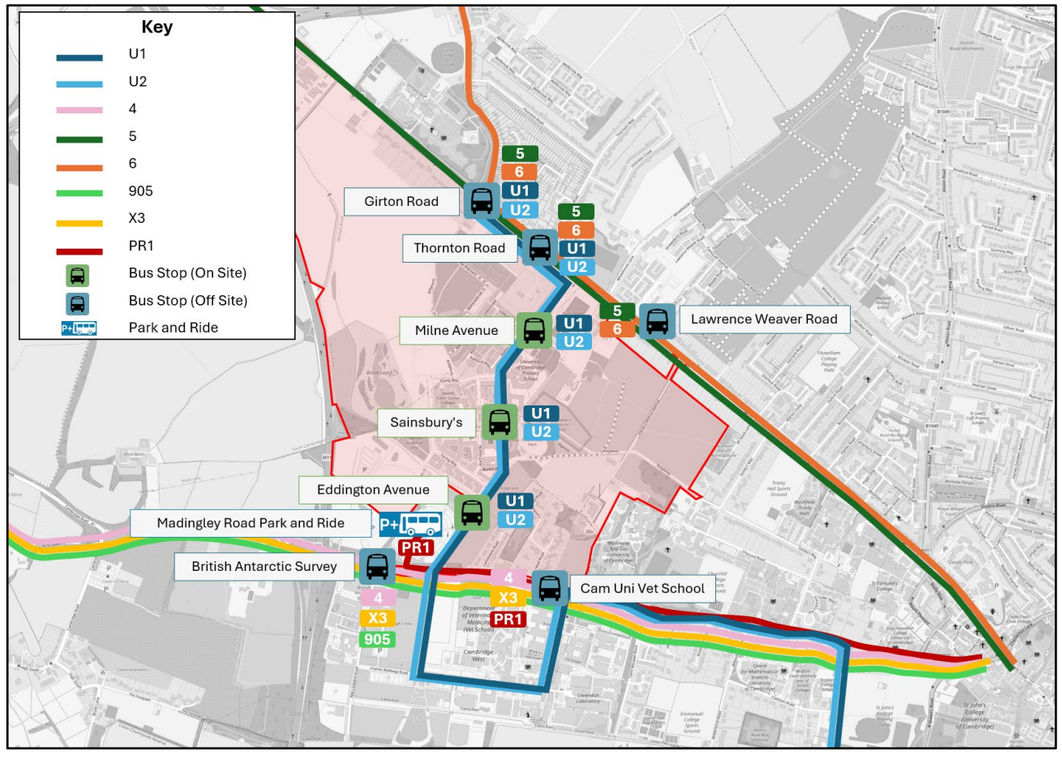
5.51 Any parking for operatives or contractors will be provided within the site boundary and coordinated with the works by the Principal Contractor. Visitor parking will also be provided within the site boundary.

5.52 Secure access points with wheel cleaning facilities will be established at each site when excavation and groundworks are taking place. Pedestrian access points for construction workers will generally be located close to the main vehicular access gates with separate pedestrian gates and footpaths provided.

5.53 To minimise the likelihood of congestion during the demolition and construction period, strict monitoring and control of vehicles entering and egressing the sites will be implemented. Construction deliveries will be carefully planned with delivery times agreed with each contractor using a booking system. Delivery schedules will be produced in order to look at the profiles of up and coming deliveries, and to regulate deliveries and eliminate bottle necks.

5.54 Specific time slots will be allocated to the sub-contractors and suppliers for the use of cranes and hoists, to ensure that the main plant will be utilised efficiently, and that deliveries are not queued.

Figure 5.7 Location of Key Transport Nodes



Construction Access Routes

5.55 Inbound traffic from the A14 East to the Huntingdon Road West junction is required to U-turn at Bar Hill. Traffic accessing the site at the Madingley Road access point is required to U-turn at Junction 12 of the M11 and then use the M11 off slip at Junction 13.

5.56 Inbound traffic from the A14 West to Huntingdon Road West will use the A1307 off slip. To access the Madingley Road access requires the use of the M11 and J12 to u turn and then M11 J13 off slip.

5.57 Inbound traffic from the A428 West to the Huntingdon Road West Junction is required to U-turn at the Histon interchange, then proceed westbound along the A14 and then U-turn at Bar Hill before then using the A1307 off slip. Madingley Road access will be via the 'Madingley Mulch' roundabout.

5.58 Inbound traffic from the M11 South to the Huntingdon Road West Junction is required to continue north before U-turning at Bar Hill before then using the A1307 off slip. To access Madingley Road (A1303) requires the use of Junction 13 off slip.

5.59 Outbound traffic to the A14 East from the Huntingdon Road West is required to U-turn at Bar Hill before heading south and then east. From the Madingley Road access, it is required to U-turn at Junction 12 of M11 and then use the M11 to head north and then slip onto the A14 eastbound at the Girton Interchange.

5.60 Outbound traffic to the A14 West from Huntingdon Road West will use the A1307 on slip. From the Madingley Road access it is required to use of the M11 south and Junction 12 to U-turn and then use M11 north before joining the A14 westbound.

5.61 Outbound traffic to the A428 west from Huntingdon Road West Junction is required to U-turn at Bar Hill and then further U-turn at the Histon interchange, before heading west along the A14 and then A428. From the Madingley Road access would be via 'Madingley Mulch' roundabout.

5.62 Outbound traffic to the M11 south from the Huntingdon Road West Junction is required to continue north before U-turning at Bar Hill before heading south. From the Madingley Road access it is required to use the Junction13 on slip.

5.63 Inbound and outbound construction routes are shown in Figure 5.9 and Figure 5.10 respectively.

Vehicle Numbers

5.64 Construction traffic includes HGVs, Light Goods Vehicles (LGVs) and cars which will travel to and access the site during the enabling, demolition and construction period. The maximum number of daily vehicles trips expected to be travelling to and from the site is 2,001 (one way) during month August, September, and October 2033 of the construction period. Of these vehicles it is estimated that 65 per day (71%) are expected to be HGVs and the remaining 26 per day (29%) will be Light Goods Vehicles (LGVs) and general construction traffic.

5.65 Table 5.11 shows the anticipated daily vehicles peaks during each year of the demolition and construction period, for all construction traffic.

Table 5.11 Construction Traffic: One Way Trips Peaks per year

Year	Peak Per Month			Peak Per Day		
	Total	HGV	LGV	Total	HGV	LGV
2027	846	413	433	38	19	20
2028	846	450	433	38	20	20
2029	900	611	289	41	28	13
2030	1251	876	375	57	40	17
2031	1707	988	718	78	45	33
2032	1807	1021	785	82	46	36
2033	2001	1434	567	91	65	26
2034	1695	1225	470	77	56	21
2035	1369	987	382	62	45	17
2036	263	170	93	12	8	4
2037	263	170	93	12	8	4

Figure 5.8 Monthly Construction Vehicle Trips

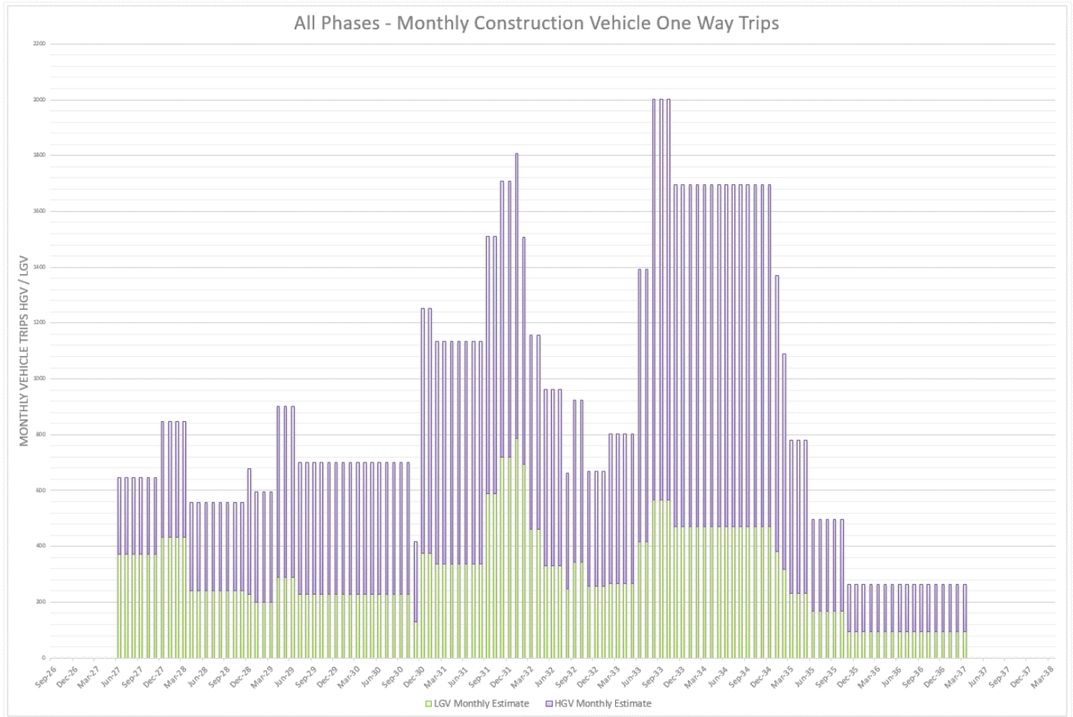


Figure 5.9 Inbound Construction Routes

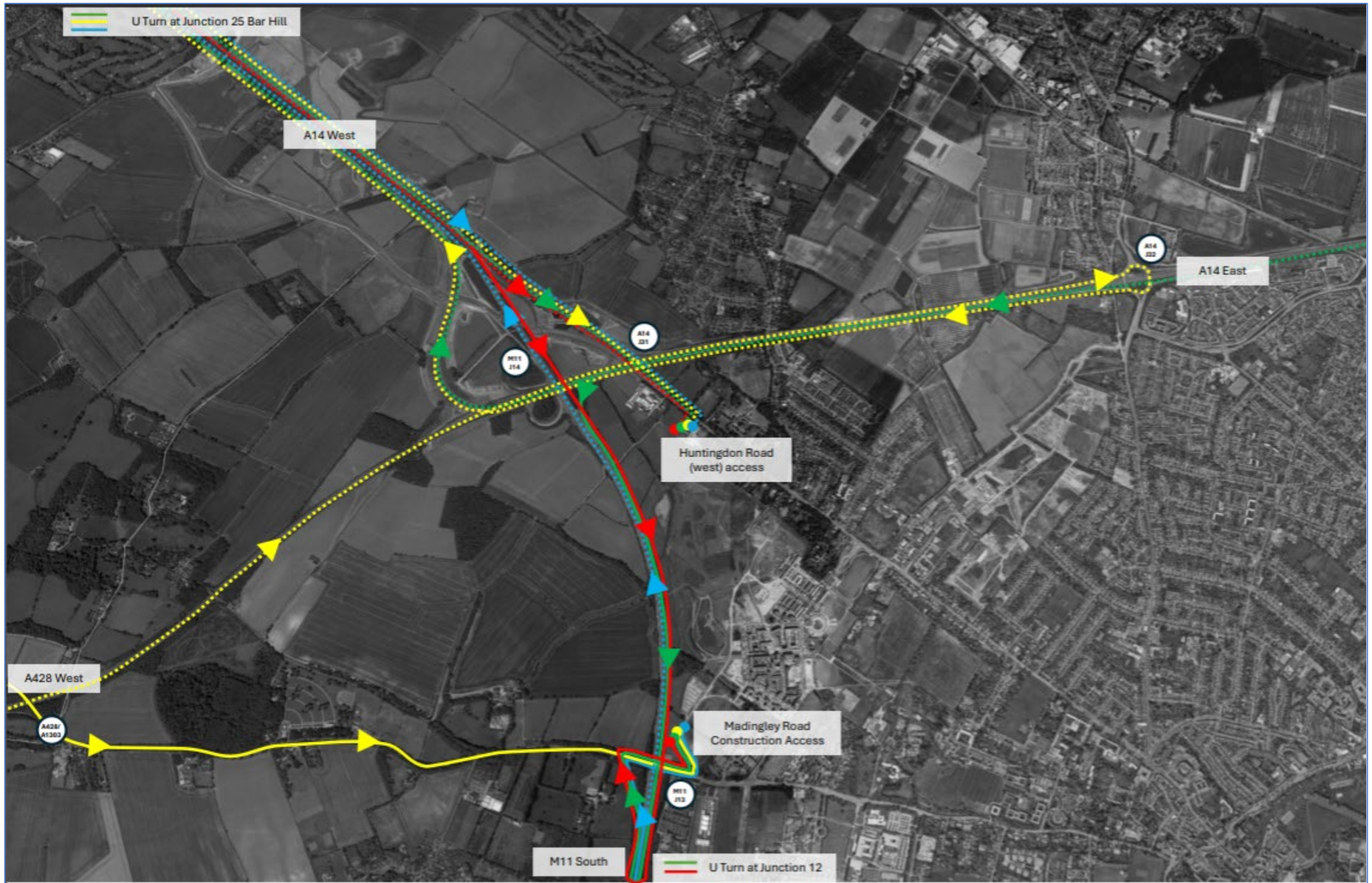
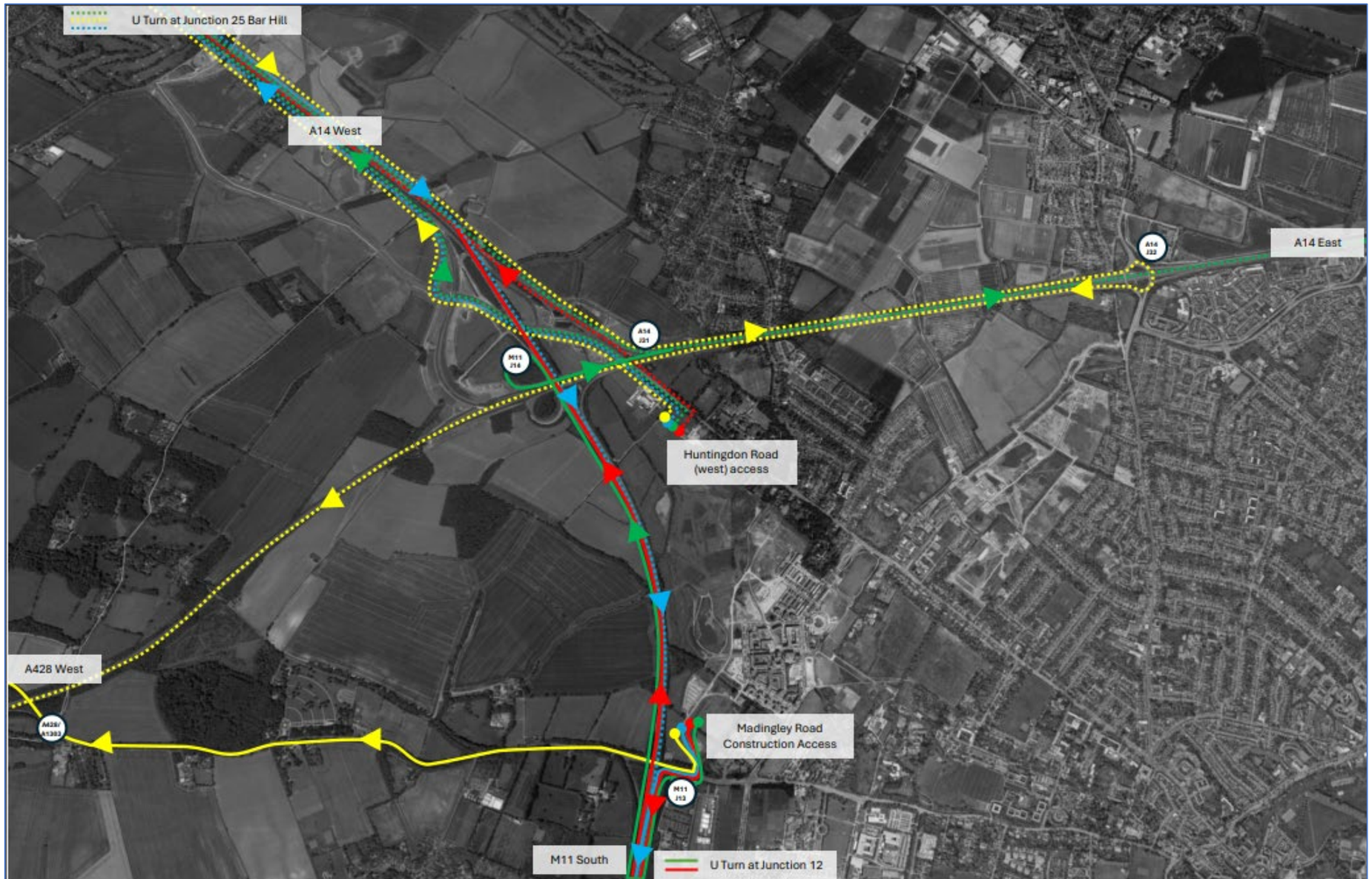


Figure 5.10 Outbound Construction Routes



Outbound Construction Routes from Strategic Road Network

A14 west to Site
M11 south to site
A14 east to Site
A428 west to Site

PLANT AND EQUIPMENT

5.66 Consideration has been given to the types of plant that are likely to be used during the enabling, demolition and construction works. The plant and equipment associated with the demolition works, and construction process is set out in Table 5.12 below.

Table 5.12 Plant and Equipment Associated with the Works

Plant	Infrastructure	Enabling and Ground Works	Construction	Fit Out and Landscaping
Bulldozers	**x**	x		
Wheeled Excavator	**x**	x		
Breakers			x	
Tower Cranes			x	
Mobile Cranes			x	
Platform Hoists			x	
Cutters, drills and small tools			x	
Crusher		x		
360º excavators		x	x	
Floodlights	x	x	x	
Fork lift truck			x	x
Generators	**x**	x	x	
Hydraulic benders and cutters			x	x
HGVs/lorries/vans	**x**	x	x	x
Piling rigs			x	
Scaffolding and mobile hydraulic access platforms			x	x
Hydraulic Climbing Screens				
Mast Climbers			**x**	**x**
Ready-mix concrete lorry	**x**	x	x	
Concrete pump & boom	x	x	x	
Mortar batching plant			x	
Water pump	x	x	x	x
Temporary supports	**x**	x	x	

HOURS OF WORKS

5.67 Working hours will be in accordance with best practice:

- Monday to Friday – 7am to 7pm;
- Saturdays – 8am to 1pm; and
- At no time: Sundays, Bank and Public Holidays.

5.68 Start-up and close-down periods of up to an hour before and after core working hours (8am to 6pm) will be used for activities such as arrival of workforce and staff on site; deliveries and unloading; maintenance and checking of plant and machinery; general refuelling; site inspections, and safety checks prior to commencing work; site meetings; and general site clean-up and departure.

5.69 Where additional hours are required for special events (including plant deliveries and crane erection for example), the contractor will apply for dispensation in accordance with the Cambridge City Council and South Cambridgeshire District Council noise nuisance guidance.

COMMUNITY LIAISON

5.70 In advance of the works commencing on site, a public briefing/information session for the local community on the works that will be undertaken will be held at a local venue. These drop-in briefing / information sessions will be held periodically (particularly in advance of key milestones in the construction programme) over the duration of the construction period and will provide an opportunity not only for the contractor and the Applicant to disseminate information but also for local residents, businesses and stakeholders to ask questions of the contractor and the Applicant and raise any particular concerns. The public briefings / information sessions will be publicised via a variety of channels and be open on specified days so those with differing commitments can attend.

5.71 In advance of and during the demolition and construction works, the contractor/Applicant will maintain a number of other methods to communicate with the local community to keep them informed of progress on the scheme and enable concerns to be voiced and listened to. These methods will also be used as appropriate to inform local residents and neighbours of any emergency work required on site. These methods will likely include newsletters, drop in sessions, updates via a dedicated website and email address, a dedicated hotline and text alerts for targeted communications (including in the event of emergency works).

COMPLAINTS PROCEDURE

5.72 A staffed hotline will be available 24/7. This will provide local residents with the ability to communicate directly with the appropriate personnel allowing escalation procedures to be instigated, ensuring all enquiries are handled promptly.

5.73 The hotline will allow any complaints to be logged and fully investigated, and responded to quickly, advising what action has been taken. If necessary, complaints will be reported to the relevant department of Cambridge City Council and South Cambridgeshire District Council.

5.74 The hotline will be operational 24/7, so will be available during normal operational hours and outside of normal working hours. The requirements for the hotline will be set out within the CEMP.

MANAGEMENT, MITIGATION AND MONITORING CONTROLS

5.75 **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule** presents the environmental management and mitigation measures that the Applicant is committed to implementing throughout the demolition and construction works to, either eliminate, or reduce the significance of any likely environmental effects.

Chapter 6: Socio-Economics

TRIUM

SOCIO-ECONOMICS	
AUTHOR	Quod
KEY CONSIDERATIONS	This ES chapter presents an assessment of the socio-economic effects of the Proposed Development. In particular, this ES chapter presents the result of the assessment of the effects related to: • Loss and displacement of existing uses on-site; • Employment generation (construction and operational); • Delivery of new housing; • Delivery of employment floorspace; • Demand on local social infrastructure; • Delivery of new open space, playspace and public realm; and • Indirect economic benefits (employee and household spending).
CONSULTATION	An EIA Scoping Report was prepared and submitted to Greater Cambridge Shared Planning Service (GCSPS) in November 2024 (**ES Volume 3, Appendix: EIA Methodology – Annex 1**). An EIA Scoping Opinion was subsequently received on 23 January 2025 and is included within **ES Volume 3, Appendix: EIA Methodology – Annex 2**. This agreed with the scope of this ES chapter.

ASSESSMENT METHODOLOGY

Basis of Assessment

6.1 The Proposed Development is being applied for in outline and therefore establishes parameters of the scale and nature of the proposals. The parameter plans outline the maximum development area by use class as outlined within the Development Specification Control Document and detailed below:

- Residential (Use Class C3/C4) – up to 365,000m^2 Gross External Area (GEA);
- Co-living (Sui Generis) – up to 52,000m^2 GEA;
- Purpose Built Student Accommodation (PBSA) (Sui Generis) – up to 52,000m^2 GEA;
- Senior Living (Use Class C2) – up to 6,500m^2 GEA;
- Employment (Use Class E(g) / Sui Generis / Research Uses) – up to 40,000m^2 GEA;
- Academic (Use Class F1(a)) – up to 60,000m^2 GEA; and
- Supporting retail, nursery, health, indoor sports and recreation (Use Class E(a) – Use Class E(f)) – up to 3,500m^2 GEA.

6.2 The total maximum floorspace for residential (Use Class C3 / C4), Co-living (Sui Generis) and PBSA (Sui Generis) is up to 417,000m^2 GEA. Therefore, it is not possible for the maximum parameters for these uses to come forward together.

6.3 The socio-economic assessment is required to assess the reasonable 'worst-case' scenarios to consider the effects on socio-economic receptors. For socio-economics, this mainly relates to creating 'worst-case' scenarios for employment (lowest level of employment generated on-site), demand on social infrastructure provision (highest population accommodated on-site) and housing delivery (lowest level of housing provided on-site).

6.4 To assess the effects arising from each of these aspects multiple assessment scenarios have been created from the parameters, floorspace and use class limits as set out within the Development Specification as described below in the '*Impact Assessment Methodology*'.

Defining the Baseline

6.5 The baseline assessment considers the current social and economic conditions at different spatial levels as defined below and shown in Figure 6.1:

- **Site** – the site, as defined by the red line boundary;
- **Inner Impact Area (IIA)** – Castle Ward (Cambridge) and Girton Ward (South Cambridgeshire) (where data is available);
- **Outer Impact Area (OIA)** – Girton Ward and Cambridge Wards (Abbey, Arbury, Castle, Cherry Hinton, Coleridge, East Chesterton, King's Hedges, Market, Newnham, Petersfield, Queen Edith's, Romsey, Trumpington, West Chesterton) (where data is available); and
- **Cambridge and South Cambridgeshire (CSC)** – Cambridge City Council (CCC) and South Cambridgeshire District (SCD); and
- **Regional** – East of England.

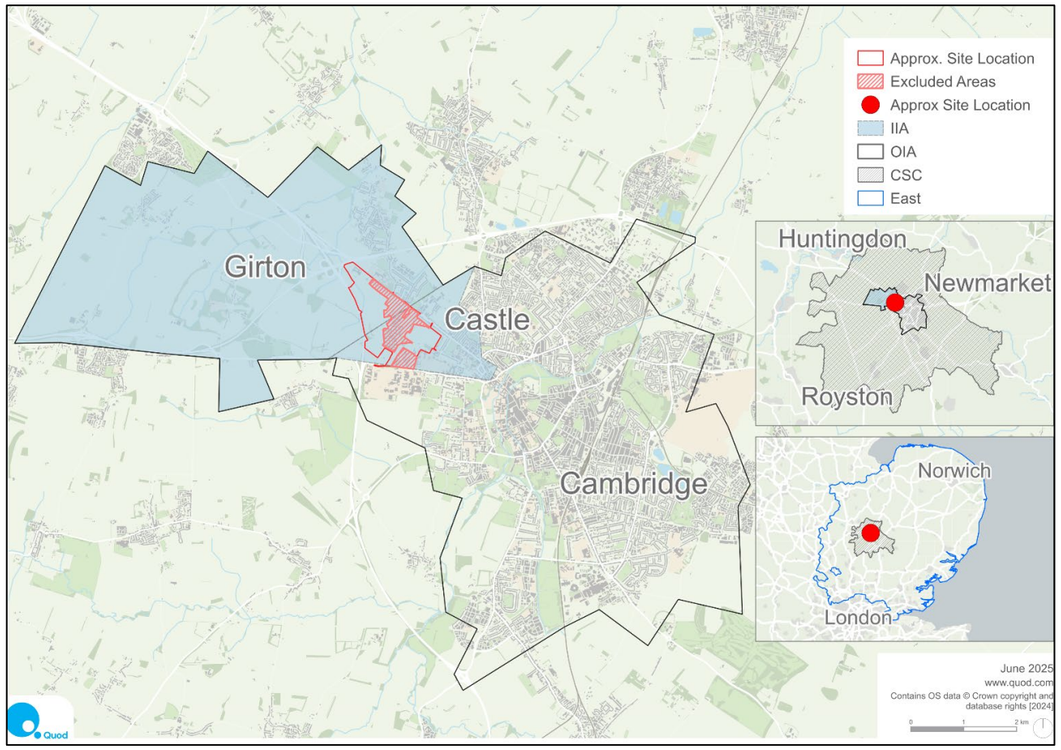
6.6 The site falls across two wards (Castle Ward and Girton Ward), which constitutes the (IIA).

6.7 The baseline for social infrastructure establishes provision within reasonable travel distances / catchments relevant to specific types of facilities:

- Primary education has been assessed within 1km from the site boundary as this is a reasonable walking distance (approximately 10-15 minute walk) based on walkable neighbourhood distances;
- To allow for pupil choice and in recognition that older students are more willing and able to travel further to school, secondary education (for academic years 7 to 11) has been assessed within 5km from the site boundary;
- Primary healthcare provision has been assessed within approximately 1km from the site boundary as this represents a reasonable walking distance (approximately a 10-15 minute walk) (unless GPs are confederated into Primary Care Networks, in which case the local Primary Care Network(s) will be used);
- Community Centres within 1km of the site a reasonable walking distance (approximately 10-15 minute walk) based on walkable neighbourhood distances;
- Library Services within Cambridge and South Cambridgeshire (CSC); and
- Existing open space and playspace has been assessed within 800m of the site boundary.

6.8 Figure 6.1 shows the local context of the site, presenting the IIA, OIA, CSC and the Region. The site boundary shown in this chapter should be treated as an approximate. The site boundary below includes areas considered in Phase 1 of the 2013 OPP which have been excluded from this assessment. These are shown in hatched outline.

Figure 6.1 Site Context



6.9 The different spatial scales will be relevant to the assessment of socio-economic impacts, Table 6.1 displays the socio-economic receptors and respective spatial areas that could face significant effects, in light of their sensitivity based on the existing conditions

Table 6.1 Spatial Sensitivity of Socio-Economic Conditions

Condition	Spatial Level
Employment	IIA, OIA, CSC and East of England
Housing Delivery	CSC
Primary Education	Local Area (1km radius)
Secondary Education	Local Area (5km radius)
Healthcare	Local Area (1km radius)
Open Space and Playspace	Site, Local (800m radius)
Community Centres	Local Area (1km radius)
Libraries	CSC
Additional Spending	IIA, OIA, CSC and East of England

6.10 The baseline socio-economic conditions that are of relevance to this assessment have been established through analysis of nationally recognised datasets, research and survey information, including:

- Census data (2011)[1];
- Census data (2021)[2];
- Business Register and Employment Survey (BRES) data (2023)[3];
- Indices of Multiple Deprivation (IMD) (2019)[4];
- Claimant Count data (2025)[5];
- Housing delivery data from Ministry of Housing, Communities and Local Government and Department for Levelling Up, Housing and Communities net additional dwellings live tables (2024)[6];
- Annual School Census data (2023)[7];
- Published admissions numbers (PAN) for state-funded primary[8] and secondary[9] schools in CCC and SCDC;
- Data on healthcare systems from NHS Digital (2024)[10]; and
- Open space information from Ordnance Survey has been reviewed alongside desk-based analysis to identify existing open space and playspaces in the area surrounding the site[11].

Future Baseline

6.11 As described in **ES Volume 1**, **Chapter 2: EIA Methodology,** the Proposed Development forms part of a wider North West Cambridge Development Masterplan, with Phase 1 partially delivered and under construction. At the time of writing several plots are complete and operational and therefore are captured in the baseline data as outlined above.

6.12 However, there are several plots that have recently completed or are currently under construction which are not captured by the baseline. These include:

- Lot 4 (Planning Reference: 22/01168/REM) construction due to be complete Q2 2025;
- Plot M1 (Planning Reference: 20/01549/REM) construction due to be complete Q3 2024;
- Plot M3 (Planning Reference: 17/0285/REM) construction due to be complete Q3 2025;
- Plot M4 / M5 (Planning Reference: 22/04989/REM) construction due to be complete 2028;
- Plot S1 / S2 (Planning Reference: 21/04036/REM) construction due to be complete Q4 2025; and
- Phase 1 Amenity Cluster A and Amenity Cluster B (submission expected Q3 2025).

6.13 The construction phase for the Proposed Development would commence in 2027 by which time Phase 1 of the 2013 OPP is expected to be completed and occupied with the exception of Plot M4/M5.

6.14 The Phase 1 Amenity Cluster A and Amenity Cluster B is the subject of a new planning application being submitted by the Applicant in Q3 2025. In accordance with the terms of the 2013 OPP Section 106 (S106) agreement, this is required to be delivered prior to the occupation of the Proposed Development.

6.15 Plot M4 / M5 and Phase 1 Amenity Cluster A and Amenity Cluster B are considered within the socio-economic future baseline. This is a departure from the methodology set out in **ES Volume 1, Chapter 2: EIA Methodology**. This is due to the consideration of open space across the wider North West Cambridge

[2] *Office for National Statistics, 2021. Census.*
[3] *Office for National Statistics, 2023. Business Register and Employment Survey (2023).*
[4] *DCLG, 2019. Indices of Multiple Deprivation.*
[5] *Office for National Statistics, 2025. Claimant Count.*
[6] *Ministry of Housing, Communities and Local Government and Department for Levelling Up, Housing and Communities net additional dwellings live tables (2024). Live Table 122: housing supply; net additional dwellings by local authority district, England (Updated November 2024).*
[7] *Department for Education, 2025. Schools, Pupils and their Characteristics. (Annual School Census Data, 2025).*
[8] *Cambridgeshire County Council Reception Allocation Sheets (2018-2025).*
[9] *Cambridgeshire County Council Secondary School Allocation Sheets (2018-2025).*
[10] *NHS Digital. General Practice Workforce, March 2025 [online]. Available at: https://digital.nhs.uk/data-and-information/publications/statistical/general-and-personal-medical-services/31-march-2025*
[11] *Ordnance Survey, Live Data Source. OS Open Greenspace.*

Development Masterplan. In accordance with the terms of the 2013 OPP S106 agreement, the open space proposed is required to come forward before occupation. On this basis it is reasonable to assume that the Future Baseline would incorporate any open space delivered under Plot M4 / M5 and the Phase 1 Amenity Cluster A and Amenity Cluster B.

6.16 Sufficient information is available through the Applicant to determine the future baseline with regards to population, therefore, the methodology as outlined below has been applied in calculating the future baseline.

Evolution of the Baseline

6.17 The evolution of the baseline identifies forecasts in social infrastructure demand and any additional facilities or capacity expected to be delivered over coming years – this assumes an indeterminate point in the future in which the site and surrounds evolve in the absence of the Proposed Development being implemented.

Impact Assessment Methodology

Enabling, Demolition and Construction

Loss and Displacement of Existing Uses

6.18 The majority of the site comprises of topsoil and clay that emerged as a result of Phase 1 development, but also still currently comprises research facilities, a farm and residential homes. The loss and displacement of these uses and occupiers are considered throughout the assessment.

6.19 The existing levels of employment on-site have been provided by the Applicant. Where a range is possible, this assessment has presented the likely worst-case scenario in terms of loss of existing employment. This figure is then used later in the assessment of the completed Proposed Development to enable the net change in jobs on-site to be assessed.

6.20 The existing residential units on-site have been considered in terms of the loss of existing uses on-site. These homes are owned by the Applicant and given the history of the proposals on-site these tenancies have been taken up in the full knowledge of the Proposed Development. It has been considered that a reasonable and proportionate approach would be that the assessment of these units as part of the operational assessment of housing delivery and social infrastructure (e.g. considering a net change) is scoped out given they are unlikely to give rise to a material effect on the assessment due to the low number of existing units (three),ownership by the Applicant and tenancy agreement.

Demolition and Construction Employment

6.21 Enabling and construction related employment supported from the Proposed Development has been considered using the Construction Industry Training Board (CITB) Labour Forecasting Tool[12]. This calculates an estimated average for the number the full-time equivalent (FTE) workforce over the duration of the construction phase, based on the total construction cost, start/finish dates, location and the type of construction.

Phasing

6.22 A qualitative assessment of phasing has been undertaken to consider the implications of the phased occupation of the Proposed Development (as set out in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**). The assessment outlines the measures that will be put in place over the construction period to consider how amenity provision will be managed for occupiers of each phase. The assessment provided is high level and does not include an assessment of the scale and significance of effects. Due to the outline nature of the Application, it is not possible to undertake a detailed phase by phase assessment of impacts, however the approach is considered proportionate and reasonable at this stage of the project. Detailed consideration of some impacts (such as open space and playspace) will need to be reviewed at the Reserved Matters stages.

Completed Development

6.23 As outlined above, the planning application for the Proposed Development is submitted for outline approval, with the exception of the primary means of external access which are sought for detailed approval.

6.24 The socio-economic assessment is required to assess the reasonable 'worst-case' scenarios to consider the likely significant effects on socio-economic receptors, for example on social infrastructure. The following scenarios are considered across this socio-economic assessment, to ensure that reasonable worst-case assessments have been undertaken for each sensitive receptor, as set out below:

Housing Delivery

6.25 The reasonable 'worst-case' scenario for the assessment of housing delivery is the fewest homes provided within the Proposed Development. The Illustrative Masterplan (3,742 homes, 1,730 PBSA) reflects the likely fewest number of homes being delivered across the Proposed Development.

6.26 Delivery of housing is assessed against policy targets as set out within the Policy 3 'Spatial strategy for the location of residential development' of the Cambridge Local Plan (2018)[13] and Policy S/5 'Provision of New Jobs and Homes'. Delivery of housing is also assessed for both the CCC and the SCDC within the Greater Cambridgeshire Authority Monitoring Report and Housing Trajectory and Housing Land Supply Report[14].

Population

Assessment Scenarios

6.27 The following two population generating scenarios have been considered for the Proposed Development:

- Illustrative Masterplan; and
- Maximum Parameters.

Illustrative Masterplan

6.28 An illustrative housing mix including unit sizes (as set out in **ES Volume 1, Chapter 4: The Proposed Development**) has been developed by the Applicant. This illustrative mix of housing types and unit sizes has been used to inform the likely mix of uses for the Maximum Parameter scenario, by applying the unit mix from the Illustrative Masterplan to this maximum quantum.

6.29 The Illustrative Masterplan includes provision of residential spaces and key worker housing (KWH) providing 3,742 units. Of these units, 57% are proposed as KWH and remaining 43% as market homes. The exact number of and mix of housing will be determined through Reserved Matter Applications (RMAs). For PBSA the Illustrative Masterplan proposes delivery of 1,730 bedspaces. This Illustrative Masterplan represents a realistic scenario of how the Proposed Development may come forward.

Maximum Parameters

6.30 The maximum parameter of homes being applied for is 3,800, which represents a realistic 'worst case' scenario in terms of maximum likely population and associated demand for social infrastructure. For PBSA the maximum is 1,800 bedspaces.

6.31 The maximum parameters allow for delivery of co-living and senior living units. These are not part of the Illustrative Masterplan but have been considered in the assessment of the 'worst case' scenario for likely maximum population.

[12] *Construction Industry Training Board (CITB) (2018) Labour Forecasting Tool (Accessed online by subscription: www.labourforecastingtool.com)*

[13] *Cambridge City Council (CCC), 2018. Cambridge Local Plan*

[14] *See footnote 6*

6.32 There is a proposed limit that caps the cumulative amount of residential (Use Class C3/C4), co-living (Sui Generis) and PBSA (Sui Generis) floorspace that can come forward. Therefore, under the maximum parameters the amount of co-living floorspace that is to be delivered (if any) is dependent on the amount of floorspace delivered as Use Class C3/C4 residential and PBSA. Flexibility between PBSA and co-living will not affect child yield as neither unit type is likely to accommodate children. Flexibility between PBSA and co-living could affect the total population, although not significantly. PBSA may have marginally more adult residents for a given floorspace because of the lower average unit size, so, for the "worst case scenario" maximum PBSA and no co-living has been assumed.

6.33 The population projections also make an allowance for 75 senior living (C2) units[15].

6.34 No mix for the maximum unit scenario is available. Therefore, the population modelling resulting from the Illustrative Masterplan has been pro-rated upwards to include the 58 additional homes, by applying to those homes the average household size and age profile of the 3,742 homes for which an illustrative mix has been provided.

Population Methodology

6.35 The estimated total resident population has been calculated for the various housing typologies using the following assumptions:

- Open market homes – average household size across the OIA as determined by 2021 Census (2.8 people per home);
- KWH – yields for unit sizes determined by occupancy survey carried out by the Applicant and agreed with Cambridgeshire County Council based on occupancy of Phase 1 as of October 2022;
- PBSA – assumes single occupancy of each unit; and,
- Senior Living – assumes a dual occupancy rate of 30%[16].

6.36 An average household size of 2.8 is relatively high compared to the UK average and average for other cities. In CCC and SCDC, this is driven by a higher propensity of homes to have multi-adult student households sharing. The provision of PBSA may decrease this propensity but this assumption has been retained as a likely worst case scenario.

6.37 The child yield estimated to be accommodated by the Proposed Development has been calculated depending on housing type.

6.38 For open market homes, child yield has been estimated using the North East Cambridge Area Action Plan (AAP)[17]. The AAP document outlines child yields which are as follows:

- 20 to 30 early years aged children per 100 new dwellings;
- 30 to 40 primary school aged children per 100 new dwellings; and
- 18 to 25 secondary school aged children per 100 new dwellings.

6.39 As per guidance, the upper end of the range has been applied to estimate children accommodated by the Proposed Development.

6.40 These yields are supplemented by detailed child yields within the supporting Demographic Briefing Paper (November 2021) to be applied where the housing mix is known. These yields are as follows:

- For market and intermediate housing:
  - 10 early years aged children per 100 new dwellings for 2 bedrooms
  - 20 early years aged children per 100 new dwellings for 3 bedrooms
  - 35 early years aged children per 100 new dwellings for 4+ bedrooms
  - 5 primary school aged children per 100 new dwellings for 2 bedrooms
  - 20 primary school aged children per 100 new dwellings for 3 bedrooms
  - 40 primary school aged children per 100 new dwellings for 4+ bedrooms
  - 0 secondary school aged children per 100 new dwellings for 2 bedrooms
  - 15 secondary school aged children per 100 new dwellings for 3 bedrooms
  - 30 secondary school aged children per 100 new dwellings for 4+ bedrooms

6.41 Both yield methodologies have been used to estimate children accommodated by the Proposed Development which provides a range of likely child yield. Based on the development typology and Illustrative Masterplan it is much more likely that the yield will fall at the lower end of this range but to ensure a worst-case assessment the full range has been assessed.

6.42 For KWH child yields have been informed by 2021 Census data on household composition for the OIA as follows:

- 0.41 early years aged children per dwelling with children;
- 0.77 primary school aged children per dwelling with children; and,
- 0.53 secondary school aged children per dwelling with children.

6.43 These yields are distinct from a typical average child yield (as shown in paragraph 6.30) in that they are only applied to sub-set of homes that have already been identified as having children. These yields have been applied to propose KWH according the same survey data provided by the Applicant on KWH occupancy. This outlines that 1 bed units do not accommodate any children and 10.6% of 2 bed units accommodate children. All 3 bed units are assumed to accommodate children.

6.44 It is assumed that PBSA / co-living and senior living units do not accommodate any children.

6.45 For population both the Maximum Parameters scenario and Illustrative Masterplan scenario have been presented. However, the assessment is based on the 'worst-case' (i.e. maximum likely population and therefore maximum likely associated demand for social infrastructure) which is 3,800 homes.

6.46 The child yield accommodated by Phase 1 of the 2013 OPP as part of the Future Baseline have been estimated using the detailed housing mix set out in the North East Cambridge Area Action Plan as detailed housing mixes are known and available.

Sensitivity Test

6.47 As outlined above, the Illustrative Masterplan (and in turn the tested Maximum Parameters) proposes delivery of 57% KWH and 43% market homes. The Development Specification allows for delivery of 50% KWH and 50% market homes. A sensitivity test has therefore been carried out to amend the Maximum Parameters to reflect this split to outline the potential effects on child yield. This is considered to be the most sensitive assessment given the potential for market homes to accommodate a greater child yield than KWH.

Demand for Social Infrastructure

6.48 An audit of existing community facilities is set out in the '*Baseline Conditions*' section. Against this baseline, an assessment of additional demand for these community facilities locally associated with the Proposed Development is based on the following methodologies and data sources:

[15] *The delivery of senior living floorspace (up to 6,500m^2) is taken forward from the 2013 OPP. This application outlined delivery of a care home facility of 75 rooms as stated in the submitted Senior Care Needs Assessment.*
[16] *As outlined in the submitted Senior Care Needs Assessment.*
[17] *Greater Cambridge Shared Planning (2020). North East Cambridge Area Action Plan (AAP) Regulation 18 Consultation. [online] Available at https://oc2.greatercambridgeplanning.org/docfiles/213/38322/Draft%20North%20East%20Cambridge%20Area%20Action%20Plan%20-%20download%20version.pdf*

- **State-Funded Education Facilities**: the Proposed Development's additional local demand for school places is considered against existing capacity of schools surrounding the site;
- **Primary Healthcare Facilities (General Practitioner (GP) surgeries)**: the capacity of local GP surgeries has been assessed using the regional and national benchmarks for registered patients per NHS GP; net additional local demand associated with the total population of the Proposed Development has been assessed against this baseline;
- **Open Space and Playspace**: the Proposed Development's provision of open space has been assessed in line with guidance set out in North West Cambridge Area Action Plan[18] (outdoor space, informal open space and allotments) and playspace in line with the agreed S106 for 2013 OPP (dated 22 February 2013). In line with Cambridge Local Plan (2018) Appendix I: Open Space and Recreation Standards the provision of space for allotments and outdoor sports facilities does not include demand arising from the proposed PBSA. The application of the standards (Table I.3) notes that no provision of allotments is required for students and the provision of sports facilities on-site is not sought where accommodation is directly linked to a university and can be met by that university. The delivery of PBSA is made by the Applicant (the University of Cambridge); and,
- **Community Centres and Libraries**: access to and provision of community centres and libraries will be considered on a qualitative basis as take up and access of these facilities varies and cannot be accurately predicted or quantitatively assessed – provision of these types of facilities is responsive to demand in the local community.

Employment Creation and Local Economy Impacts

Assessment Scenarios

6.49 Given the outline nature of the Proposed Development the assessment has been informed by the maximum parameters allowable as outlined in the Development Specification and below:

- Employment (Use Class E(g) / Sui Generis Research Uses) – up to 40,000m^2 GEA;
- Academic (Use Class F1(a)) – up to 60,000m^2 GEA; and
- Supporting retail, nursery, health, indoor sports and recreation (Use Class E(a) – Use Class E(f)) – up to 3,500m^2 GEA.

6.50 The maximum parameters for non-residential floorspace are based on a total sum of the above floorspaces totalling 103,500m^2 GEA total – no minimum floorspace is proposed.

6.51 The Illustrative Masterplan is presented alongside the maximum parameters to provide a realistic overview of how this floorspace may come forward. No scale or significance is assigned to this assessment as it is not considered the worst-case.

6.52 A qualitative assessment is included to consider the impact of the provision of commercial floorspace and key worker accommodation with regards to the local economy.

Employment Methodology

6.53 The Proposed Development will provide flexible commercial floorspace as follows:

- Use Class E: Flexible employment generating floorspace (E(g));
- Sui Generis: Flexible employment generating floorspace research and development;
- Use Class E: Commercial, service and business class (E(a) – E(f));
- Use Class F1: Learning and non-residential institution (F1(a));
- Use Class C2: Senior Living Dwellings; and
- Sui Generis: PBSA / Co-living.

6.54 The employment expected to be accommodated by the completed and operational commercial floorspace of the Proposed Development has been calculated by applying the standard job density ratios from the Homes and Community Agency (HCA) Employment Density Guide (2015)[19].

6.55 The Proposed Development includes provision of flexible Use Class E(g) and Sui Generis floorspace. The flexible employment generating floorspace is most likely to provide offices to carry out any operational or administrative functions (Use Class E(g)(i)) or research and development (R&D) of products or processes (Use Class E(g)(ii) / Sui Generis). A density of range of 10m^2 (NIA) based on office floorspace (previously B1a) to 60m^2 (NIA) based on R&D floorspace (previously B1b) per employee has been applied to the floorspace as the exact nature of the future occupiers is not yet known.

6.56 A density range of 65m^2 to 70m^2 (Gross Internal Area (GIA)) per employee has been applied to the proposed academic floorspace (Use Class F1). This is based on professional experience of similar developments and precedent within the industry.

6.57 The remaining flexible Use Class E floorspace (up to 3,500m^2 GEA) is likely to comprise retail, nursery, health and indoor sports use (E(a) – E(f)). For this floorspace, minimum and maximum employment generation has been modelled by applying standard job density ratios from various resources including HCA Guidance, Department for Education (DfE) Guidelines[20] and NHS precedent[21]. The full range of uses that fall within Use Class E are outlined below:

- One employee per 15m^2 (Net Internal Area (NIA)) for retail uses (HCA Guidance);
- One employee per 100m^2 (GIA) for gym uses (HCA Guidance);
- Employment accommodated by nursery uses (Use Class E(f)) (as per DFE Guidelines) –
  - Children under two years of age must have at least one member of staff for every three children with 3.5m^2 (NIA) of floorspace per child; and
  - Children aged three and over must have at least one member of staff for every 13 children and with 2.3m^2 (NIA) per child.
- Employment accommodated by health centre uses (Use Class E(e)) (as per NHS precedent) –
  - 199m^2 (GIA) per FTE GP[22] and a staff multiplier of two to reflect other administrative roles accommodated by GP surgeries.

6.58 Whilst the minimum and maximum employment associated with the full range of Use Class E uses has been modelled and presented within this ES chapter for completeness, it is unlikely that proposed floorspace would come forward in these extremes (i.e. all health (which generates lower numbers of jobs) or all retail (which generates higher numbers of jobs).

6.59 The following densities have been applied for the senior living, co-living and student accommodation spaces which are based on the HCA Employment Density Guide and professional experience:

- Student Accommodation (Sui Generis): 1 job per 50 to 75 student bed spaces; and
- Senior Living Space (Use Class C2): 1 job per 26m^2 Net Internal Area (NIA).

Local Expenditure

6.60 An assessment of the level of spending likely to occur once the Proposed Development is completed, and the impact of the additional expenditure on the local economy, has also been carried out. This includes an assessment of:

[18] *CCC and SCDC (2009). North West Cambridge Area Action Plan (AAP) Local Development Framework Development Plan Document. [online] Available at https://www.cambridge.gov.uk/media/2710/north-west-cambridge-area-action-plan.pdf*
[19] *Homes and Communities Agency, 2015 Employment Density Guide*
[20] *Department for Education (2017). Statutory Framework for the Early Years Foundation Stage.*
[21] *This has been based on Quod's professional judgment based on research and past experience of working with the NHS.*
[22] *This has been based on Quod's professional judgment based on research and past experience of working with the NHS.*

- Household expenditure generated by the new households living within the new homes who may buy goods and services locally. This assessment was based on the Regional average household expenditure of £220 per week per household for East of England (ONS Family Spending Survey 2023[23]);
- Households where the household reference person is over 75 spend an estimated average £148 per week (UK figure weighted for East of England). Housing with care typically includes some food and services paid for directly to the provider or operator, so this average is likely to be an over estimate of what would be spent outside the home. Adjustments for these bring the likely expenditure down to £110 on average (UK figure weighted for East of England);
- Local expenditure by net additional employees. An average spend per day of £10.59 per employee has been applied, based on survey information carried out by research agency Loudhouse for Visa Europe (2014)[24] and adjusted to account for inflation[25]; and
- Spending by students has been based on an average annual student spend of £7,988 on goods and services. This is based on data from the Student Income and Expenditure Survey and adjusted for inflation[26].

Assumptions and Limitations

6.61 The 2021 Census was undertaken in March 2021, during the Covid-19 pandemic and therefore affected by the impacts of the pandemic. This is an unavoidable limitation that, in this context, is not likely to materially affect the assessment or conclusion.

6.62 In relation to the assessment of primary healthcare – for NHS GPs, residents usually register with a GP within the catchment area of where they live. Changes in the rules around GP registrations means that people can put a case forward to register with a GP outside of their catchment area. However, this tends to be relatively rare, therefore assuming new residents of the Proposed Development will register close to their home is considered to be a reasonable assumption based on evidence and GP operation.

6.63 The floorspaces for the maximum parameters are provided in GEA. The following conversions have been applied to derive the GIA and NIA from these floor areas:

- GIA is 92% of GEA; and,
- NIA is 80% of GIA.

Methodology for Defining Effects

6.64 There is no published or formalised technical guidance relating to the assessment of socio-economic effects. Professional judgement and experience have therefore been drawn upon to assess the scale and significance of the socio-economic effects of the Proposed Development.

Receptors and Receptor Sensitivity

6.65 Receptor sensitivity is largely driven by the baseline conditions and the extent to which socio-economic issues are present in the area. 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. Receptor sensitivity is based on the scale set out below.

6.66 Receptor sensitivity is based on a scale of:

- **High:** above average levels of socio-economic deprivation (for example, unemployment), severe historic under-delivery of housing or social infrastructure with no surplus capacity, low responsiveness of receptor to change;
- **Medium:** average levels of socio-economic deprivation (for example, unemployment), slight historic under-delivery of housing, or social infrastructure operating close to capacity or with limited surplus capacity, medium responsiveness of receptor to change; and
- **Low:** below average levels of socio-economic deprivation (for example, unemployment), good housing delivery rate (i.e. housing targets have been consistently met) or social infrastructure with surplus capacity; low responsiveness of receptor to change.

Magnitude of Impact

6.67 The assessment of the magnitude of the socio-economic impact is quantified where possible and an objective qualitative assessment is made in the cases where quantification is not possible. The magnitude of impact is based on a scale of:

- **High:** substantial change to one or more of the socio-economic receptors;
- **Medium:** noticeable change to one or more of the socio-economic receptors;
- **Low:** hardly perceptible change to one or more of the socio-economic receptors; and
- **Negligible:** No perceptible change to one or more of the socio-economic receptors.

Defining the Effect

Effect Nature

6.68 The nature of an effect has been determined by reference to the following criteria:

- **Adverse:** a negative effect to a socio-economic resource or receptor; and
- **Beneficial:** an advantageous effect to a socio-economic resource or receptor.

Effect Scale

6.69 The scale of the effect, based on a scale of:

- **Negligible:** effects generally beneath levels of perception;
- **Minor:** slight or highly localised effects;
- **Moderate:** limited effects; and
- **Major:** considerable effect.

6.70 Categorising/determining the scale of environmental effects has been based on existing best practice guidance where available; where not available professional judgement has been applied, taking into account the receptor sensitivity and magnitude of impact (as set out in Table 6.2 below), alongside the duration, extent and context, to determine the scale of effects and whether they are significant or not.

6.71 Table 6.2 sets out the approach to determining the scale of effect. Determining the scale of socio-economic effects requires professional judgement therefore the matrix below includes a degree of flexibility when considering the magnitude of an impact in the context of the sensitivity of the receptor. The reasoning behind the professional judgement is clearly explained in the assessment section below.

[23] *Office for National Statistics, (2024). Household Expenditure Survey 2021-2023.*
[24] *Visa Europe, (2014). UK Working Day Spending Report.*
[25] *Bank of England, (2021). Inflation calculator. Available online: https://www.bankofengland.co.uk/monetary-policy/inflation/inflation-calculator.*
[26] *Department for Education, (2023). Student Income and Expenditure Survey 2021-2022. Living costs: food, households goods, personal items and entertainment - mean of £7,988 (Table A4.13aExcl - Mean).*

Table 6.2 Matrix to Determine Scale and Significance of Effect

Receptor Sensitivity	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Major	Major or Moderate	Moderate or Minor	Negligible
Medium	Major or Moderate	Moderate	Minor or Negligible	Negligible
Low	Moderate or Minor	Minor or Negligible	Negligible	Negligible

Geographic Extent of Effect

6.72 The geographic extent of the effect is identified i.e. IIA, OIA, CSC or Regional level.

6.73 For social infrastructure bespoke geographic extent have been identified for the 'Local' area as described in Table 6.1. This is to ensure that the assessment aligns with the baseline collection. Where the geographic extent differs, this will be clearly signposted throughout the assessment.

Effect Duration

6.74 Effects generated as a result of the construction works (i.e. those that last for this set period of time) are classed as 'temporary'. Effects that result from the completed and operational Proposed Development are classed as 'permanent' effects.

6.75 Temporary effects are defined as being:

- **Short-term:** up to five years;
- **Medium-term:** five to 10 years; and
- **Long-term:** over 10 years.

6.76 The demolition and construction stage would occur over a 10 year period (works commencing in 2027 and finishing in 2037). The socio-economic impacts and effects arising during the on-site demolition and construction stage would therefore be temporary and would range from short to medium-term, although the development programme will space a period of approximately 10 years. This is because the impact and effects to any specific receptor would vary over time depending on the nature, location and phasing of the predicted works.

6.77 Effects that result from the completed and operational Proposed Development are classed as 'permanent' effects and therefore classified as long-term.

Direct and Indirect Effects

6.78 The assessment also identifies whether the effect is 'direct' or 'primary' (i.e. resulting without any intervening factors) or 'indirect' or 'secondary' (i.e. not directly caused or resulting from something else).

6.79 Effects classified as moderate or major in scale are considered 'significant'. Effects classified as minor or negligible in scale are considered 'not significant'.

Categorising Likely Significant Effects

6.80 Effects classified as moderate or major in scale are considered 'significant'. Effects classified minor or negligible in scale are considered 'Not Significant'.

BASELINE CONDITIONS

6.81 This section summarises the socio-economic conditions at the spatial levels identified in paragraph 6.5. This information provides the baseline against which the potential effects of the Proposed Development have been assessed.

Existing Site

6.82 The existing site currently predominantly comprises grassland fields, construction areas and hardstanding. There are a variety of amenity and green spaces on the site including swales, ponds, grassland, areas of woodland, hedgerows and individual trees.

6.83 The most northernly extent of the site accommodates the Barcroft Centre and associated buildings. The Barcroft Centre is a University of Cambridge operated site and currently accommodates research facilities relating to veterinary medicine. It is estimated that the centre accommodates approximately 8 FTE employees on-site with an additional 20 to 25 employees who visit on a weekly basis. This information has been provided by the Applicant. It is understood from the Applicant that the employment from the Barcroft Centre is expected to be relocated to other University Farm sites resulting in a marginal net job loss.

6.84 Adjacent to the centre are two residential homes owned by University of Cambridge. Information from the Applicant notes these are rented out fixed term tenancies.

6.85 To the south-east of the site, adjacent to Madingley Rise, is a collection of buildings comprising Gravel Hill Farm, a University of Cambridge owned residential home and a building accommodating CASP – an independent geological research trust which currently employs around 10 FTE employees.

6.86 All of these buildings are planned to be demolished with the exception of CASP which is likely to remain on-site.

6.87 Gravel Hill Farm is partially used as offices for the University of Cambridge site management team for the Proposed Development. These jobs will be retained for the duration of construction. The remaining buildings associated with the farm are estimated to accommodate approximately 45 FTE employees (including full time and part time roles) based on information provided by the Applicant. Farming activities will have phased end dates, according to the construction programme.

Demographic Baseline

6.88 At the time of the 2021 Census, the total resident population of the IIA was 13,200, with most people living in Castle ward (Cambridge) (7,900). Between 2011 and 2021 Census the population of CSC increased from 272,600 to 307,800 - a population growth rate of 13%, which is greater than the growth rate at the regional level (8%).

6.89 A high proportion of both the IIA's residents (79%) and the OIA's residents (80%) are of working age. Children aged 15 and under accounted for 8% of the IIA's resident population, lower than the proportion at the regional level (9%), equal to the proportion within the CSC, and higher than the proportion within the OIA.

6.90 A summary of the demographic baseline is set out in Table 6.3.

Table 6.3 Demographic Baseline Summary

Measure	IIA	OIA	CSC	East
Total Population				
2011 Census	*	*	272,600	5,847,000
2021 Census	13,200	151,000	307,800	6,335,000
2011 to 2021 Population Growth	-	-	13%	8%
Age Profile: 2021 Census				
0-15 years	13%	14%	17%	19%
16-74 years	79%	80%	75%	72%
75+ years	8%	6%	8%	9%

Measure	IIA	OIA	CSC	East
Source: Census 2011, Census 2021 ** Both CCC and SCDC revised their ward boundaries between the 2011 and 2021 Census. Both Girton ward (SCDC) and Castle ward (CCC) changed between 2011 and 2021; this data is therefore not comparable for these levels.*				

Labour Market Baseline

6.91 In 2021, the economic activity rate within the IIA was 52%, which is lower than proportions within the OIA (59%), CSC (59%) and the East of England (65%). Those that are classed as 'economically inactive' include students and retired population. At the IIA and OIA level, students make up a large proportion of the working age population – 25% and 20% respectively. At the CSC and regional level, those that are retired make up a significant proportion of the working age population at 16% and 23% respectively.

6.92 Unemployment rate provides a better indication of the health of the local economy. The IIA unemployment rate was 4.6% – lower than the OIA (4.9%) and CSC (4.8%) but higher than the region at 3.3%

6.93 Claimant count data provides the more recent information on the number of people claiming unemployment – related benefits, which includes Jobseekers' Allowance and Universal Credit. The count is calculated for all working age residents aged between 16 and 64 years. This dataset is unable to capture all unemployed individuals as some local residents may not claim these benefits or may be ineligible.

6.94 In April 2025, the claimant count rate within the IIA was recorded to be 0.9% of the residents aged 16-64. This is lower than the rates for the OIA (2%), CSC (2%) and the average across the whole of the east (3.4%).

6.95 The IIA has a higher proportion of people with higher education qualifications (61%) when compared to other study areas. The proportion of individuals with no formal qualifications was lower within the IIA (5%) when compared to the OIA, CSC and the East of England (at 10%, 11% and 18% respectively).

6.96 Analysis of the occupational profile of the different geographic areas shows that areas with higher rates of qualification attainment also had a higher proportion of employed working age residents in managerial, technical or professional jobs (categorised as 'high-skilled')[27]. Approximately 77% of the IIA's employed population held high-skilled jobs at the time of the 2021 Census – higher than all other study areas.

Employment Baseline

6.97 According to 2023 BRES data, there are 10,200 jobs in the IIA, 121,000 jobs in the OIA, 211,000 in the CSC, and 2,970,000 in the Region. The largest employment sector in the IIA was "Education", accounting for 41% of jobs. The rate was significantly higher than the proportions of "Education" jobs in OIA (22%), CSC (15%) and Region (9%) reflecting the key role of the University of Cambridge to the local area.

6.98 "Professional, scientific & technical" is the second largest sector in the IIA, accounting for 18% of jobs, which is lower than the rates in the OIA (20%) and CSC (22%) but higher than the Regional proportion (9%).

6.99 "Arts, entertainment, recreation & other services" is the third largest sector in the IIA, accounting for 9% of jobs, which is higher than the rates in the OIA (5%), CSC (4%) and Region (5%).

6.100 The construction workforce is highly mobile, with workers frequently travelling regionally (and sometimes nationally and internationally) to fill vacancies. Therefore, the construction economy is best considered at a higher spatial level. According to the latest Construction Industry Training Board Labour Market Intelligence report for the East of England, there were c.209,620 construction jobs.

6.101 A summary of the economic and employment baseline is presented in Table 6.4.

Table 6.4 Labour Market and Employment Summary

Measure	IIA	OIA	CSC	East
Economic Activity (Residents Aged 16-74 Years), 2021				
Total number of working age residents	10,400	120,500	232.000	4,560,000
Economically active (%)	52%	59%	59%	65%
Unemployment rate (%)	4.6%	4.9%	4.8%	3.3%
Claimant Count (Residents Aged 16-64) (August 2024)				
Total Claimants	80	2,420	4,135	136,205
Claimant Rate	0.9%	2.1%	2.0%	3.5%
Highest Level of Qualification (Residents Aged 16 Years and Above), 2021				
No formal qualifications (%)	5%	10%	11%	18%
GCSE/A-Levels (or equivalent) (%)	31%	30%	32%	42%
Further of Higher Education (%)	61%	56%	52%	32%
Apprenticeship qualifications (%)	2%	3%	4%	6%
Other qualifications (%)	2%	2%	2%	3%
Occupation (Residents Aged 16 – 74 Years in Employment), 2021				
Managerial / Technical/ Professional** (%)	77%	65%	63%	47%
Administrative /Trade/ Services***(%)	15%	18%	21%	30%
Sales/ Process/ Elementary**** (%)	8%	17%	16%	24%
Key Employment Sectors (Jobs)				
Total Jobs	10,200	121,000	211,000	2,970,000
Education	4,200 (41%)	26,400 (22%)	33,500 (16%)	255,000 (9%)
Professional, scientific & technical	1,800 (18%)	23,800 (20%)	46,000 (22%)	255,500 (9%)
Arts, entertainment, recreation & other services	920 (9%)	5,900 (5%)	9,300 (4%)	135,500 (5%)
Source: Census 2021, BRES 2023 and ONS 2024 *** - defined as: Managers, Directors and Senior Officials; Professional Occupations; Associate Professional and Technical Occupations* **** - defined as: Administrative and Secretarial Occupations; Skilled Trades Occupations; Caring, Leisure and Other Service Occupations* ***** - defined as: Sales and Customer Service Occupations; Process Plant and Machine Operatives; Elementary Occupations*				

Housing Baseline

6.102 As of the 2021 Census, there were 4,600 households within the IIA and 54,600 households within the OIA. The housing stock of the IIA comprised of 67% houses, 30% flats and 3% other types of household[28], with the proportion of flats being equal to the proportion within the OIA, but exceeding proportions within CSC (17%) and the East of England (14%).

[27] *Defined as the following occupations: Managers, directors, and senior officials; professional occupations; and associate professions, and technical occupations.*

[28] *Other types of household include households that are part of a converted or shared houses (including bedsits), households that are part of another converted building, households in a commercial building, or caravans or other mobile or temporary structures*

6.103 The largest tenure type within the IIA is owner occupied, accounting for 55% of households. Both the IIA (28%) and the OIA (31%) have higher proportions of privately rented households when compared to CSC and the East of England.

6.104 Overcrowding is defined by the ONS as households that do not have enough bedrooms for the number of people living in that household and their characteristics and relationships (including age and sex). Households with a rating of -1 or lower are classified as being overcrowded. 2021 Census data notes only 1% of all IIA households are overcrowded, which is lower than rates across the OIA, CSC and the East of England. Out of all tenure types in the Local Area, overcrowding is higher in privately rented households, with 3% of all households within this tenure being overcrowded.

6.105 A summary of the housing baseline is presented in Table 6.5.

Table 6.5 Housing Summary

Measure	IIA	OIA	CSC	East
Total number of households, 2021	4,600	54,600	119,000	2,630,000
Accommodation Type, Census 2021				
Flats	67%	66%	80%	82%
Houses	30%	30%	17%	14%
Other	3%	4%	3%	4%
Accommodation Tenure, 2021				
Owner Occupied	55%	45%	58%	65%
Shared Ownership	2%	2%	2%	1%
Social Rented	15%	22%	18%	15%
Privately Rented	28%	31%	22%	18%
Levels of Over-Crowding (Bedrooms, Occupancy Rating of -1 or Lower), 2021				
All Tenures	1%	4%	3%	3%
Owner-Occupied	0%	2%	1%	1%
Privately Rented	3%	9%	7%	8%
Social Rented	2%	5%	4%	7%
Source: Census 2021				

Housing Delivery

6.106 The government recognises that the country is facing a national housing shortage and that an increase in the rate of house building is required to address this.

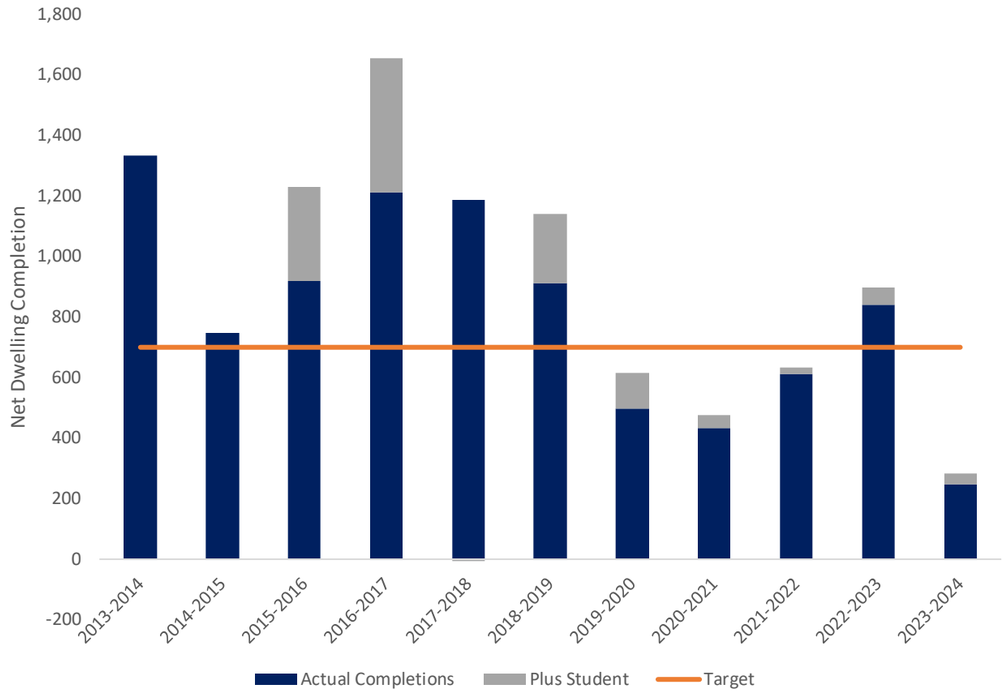
6.107 The Cambridge City Council (CCC) Local Plan 2018[29] (adopted in October 2018) requires in Policy 3 that provision is made for 14,000 dwellings during the period 2011 to 2031 to meet its objectively assessed need, which is an annualised average of 700 dwellings per year. The South Cambridgeshire District Council (SCDC) Local Plan 2018[30] (adopted in September 2018) requires in Policy S/5 that provision is made for 19,500 dwellings during the period 2011 to 2031 to meet its objectively assessed need, which is an annualised average of 975 dwellings per year.

6.108 The Ministry of Housing, Communities and Local Government (MHCLG) publishes live data on net annual housing completions down to the district level[31]. Figure 6.2 and Figure 6.3 set out these net annual housing completions to monitor the performance of CCC and SCDC against housing targets.

6.109 As shown in Figure 6.2, housing completions within CCC outperformed housing targets from 2013/14 to 2018/19 but performance has declined under delivery in 4 of the last 5 years, with 2022/23 the only year during that period to have outperformed the target.

6.110 Figure 6.3 suggests that net dwelling completions have exceeded the annual housing target for SCDC for the last 6 years (2018/19 to 2023/24), with housing completions falling beneath the annualised target in the preceding years from 2013/14 to 2017/18.

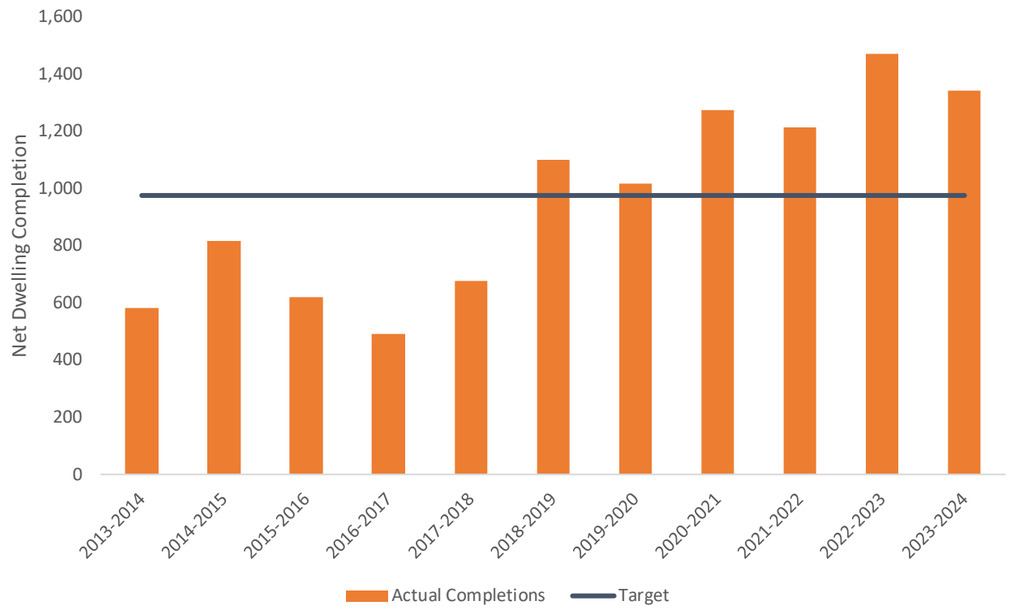
Figure 6.2 Housing Delivery (Including Student Accommodation Data Taken from Housing Delivery Test) Against CCC Local Plan Targets



29 Cambridge City Council, 2018. Local Plan
30 South Cambridgeshire District Council, 2018. Local Plan

31 Ministry of Housing, Communities and Local Government, 2024. Live Tables – Table 122: Housing supply; net additional dwellings by local authority district, England

Figure 6.3 Housing Delivery Against SCDC Local Plan Targets (Student Contribution was De Minimis)



6.111 The Housing Delivery Test data from Ministry of Housing Communities and Local Government (formerly DHLUC)[32] takes a different approach, including taking into account three year rolling averages, how up to date a Local Plan is, joint plans etc. and takes into account student and communal accommodation on the basis that it releases pressure on other housing types (adjusted for average household size).

6.112 The data for CCC and for SCDC is summarised in Table 6.6 and shows that both authorities exceeded their housing delivery requirements for the period from 2020-21 to 2022-23, with CCC delivering 258 more homes than required (equivalent to 114% of required delivery) and SCDC delivering 1,376 (equivalent to 153% of required delivery).

Table 6.6 Housing Delivery Test Data

Authority		2020-21	2021-22	2022-23	Total	Delivery
CCC	Required	438	662	685	1,785	+258 (114%)
	Delivered	511	633	898	2,043	
SCDC	Required	649	975	975	2,599	+1,376 (153%)
	Delivered	1,273	1,217	1,486	3,975	

Deprivation

6.113 The Government's Index of Multiple Deprivation (IMD) (2019) measure deprivation by combining indicators including a range of social, economic, environmental, and housing factors to give a single deprivation score for lower-layer super output areas ('LSOAs') in England. All areas are ranked relative to one another according to their level of deprivation. Seven domains of deprivation are included in the combined score:

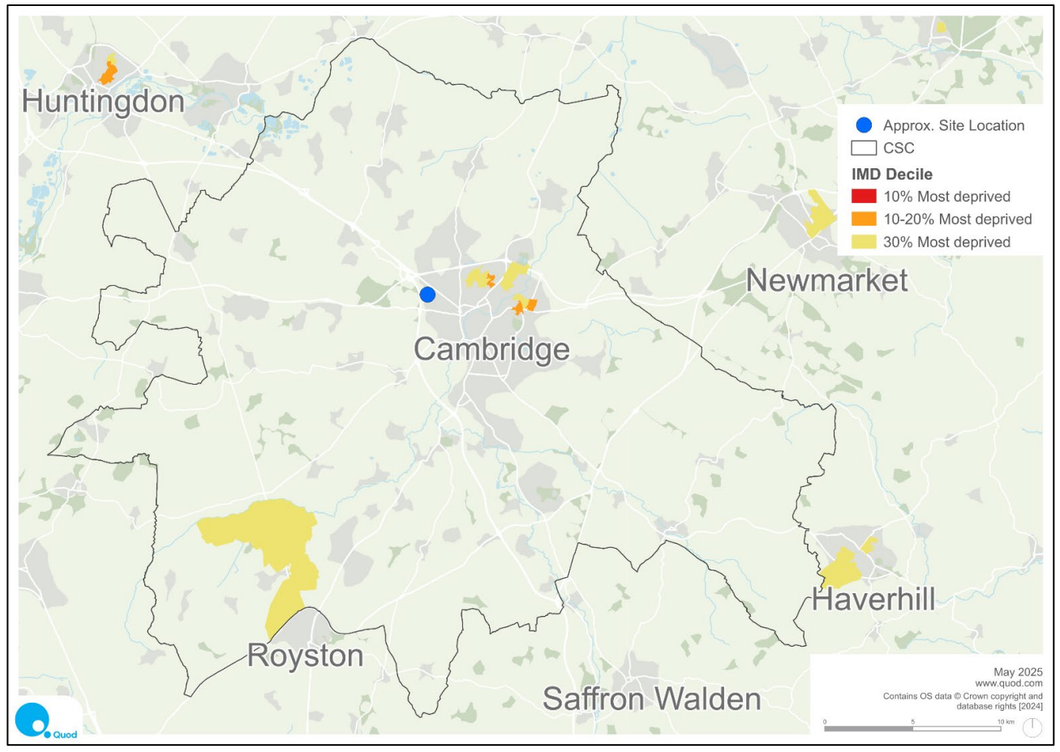
- Income;
- Employment;
- Education, skills and training;
- Health deprivation and disability;
- Crime;
- Barriers to housing and services; and
- Living environment.

6.114 Figure 6.4 shows the relative levels of deprivation surrounding the site – areas in orange are within the 10%-20% most deprived and areas in yellow are within the 20%-30% most deprived.

6.115 The IMD data indicates that the site does not fall within an LSOA which is among the top 30% most deprived in the country. Generally, the CSC experiences low levels of deprivation with no areas falling among the top 10% most deprived in England. There are some areas in the north of Cambridge that fall within top 10%-20% and 20%-30% most deprived areas in England, with this deprivation being driven by crime, income, poor health and disability deprivation. Overall, most of the CSC is among the least deprived areas across England.

6.116 Despite the site not falling amongst the top 30% most deprived areas in England for overall deprivation, the LSOA that the site falls within is recorded to be in the top 10% most deprived areas for barriers to housing services deprivation.

Figure 6.4 Index of Multiple Deprivation 2019



[32] *Ministry of Housing, Communities & Local Government (formerly Department for Levelling Up, Housing & Communities), (2024). Housing Delivery Test: 2023 measurement. Available at: https://www.gov.uk/government/publications/housing-delivery-test-2023-measurement. (Last accessed: 22 July 2025).*

Social Infrastructure

Primary Schools

6.117 The latest Annual Schools Census published by the Department of Education provides detailed data on all schools in England and the number of pupils on roll in January 2025[33].

6.118 All Local Authorities have a statutory duty to ensure that there are sufficient state-funded school places to cater for demand from local residents.

6.119 There are a total of four schools providing primary education within a 1km catchment of the site as shown in Figure 6.5. These primary schools fall across Cambridge City (South of River Cam) Primary, Cambridge City (North of River Cam) Primary and the Impington Rural 1 Primary School Place Planning Areas (SPPA).

6.120 According to the latest Schools Census data and Published Admission Numbers (PANs), the current combined surplus capacity of these four primary schools is 90 places, which is equivalent to 6% of existing capacity. Details of existing primary school capacity is set out in Table 6.7.

6.121 The closest primary school to the site is University of Cambridge Primary School which was delivered within Phase 1 of the 2013 OPP. This school currently has a surplus capacity of 4 places, equivalent to 1% of capacity.

6.122 St Luke's CofE Primary School is recorded to have the highest surplus capacity for primary education, with 30% of the school's current capacity being unfilled. It is important to note that the PAN for this school fell from 30 to 15 in September 2019. As a result of this, this school will reach its new lower capacity of 105 by September 2025.

6.123 Cambridgeshire County Council's latest education organisation plan[34] suggests that schools in Cambridge City are now experiencing falling rolls, but this has been balanced by the impact of the high levels of new housing developments in and around the city.

6.124 Within North of the River Cam SPPA, most of the major housing development will be delivered as part of the North-West Fringe including the North West Cambridge Site (the Proposed Development) and Darwin Green which is set to deliver 2,500 homes across two phases. There is set to be two new schools as part of the Darwin Green development, with the first school set to be run by Discovery Trust.

6.125 Within the South of the River Cam SPPA, there is little surplus capacity in the schools to the south and east of the city centre, with the level of infill housing developments set to put pressure on primary school places within the next three to five years. Surplus capacity within this SPPA will also be put under pressure by the 1,200 home development on Land North of Cherry Hinton, the housing development within the Trumpington area and a new 1,568 unit housing development in Marleigh.

6.126 In Cambridge City, Cambridgeshire County Council has responded to pressures experienced within the last two years through:

- The provision a new 2 Form Entry (FE) primary school, Marleigh Primary Academy, through the Wave 12 of the Free School Programme, with the school having opened in September 2022; and
- Running a free school presumption competition to identify a sponsor to run a new 2FE/420-place primary school on the Darwin Green development, with the school scheduled to open in September 2025.

6.127 When examining primary school places in South Cambridgeshire between 2011 and 2022, approximately 9,450 homes were completed with annual building rates being below the expected level of 1,230 in the first seven years of the plan period but have been close to this average in the last four years. The trajectory forecasts an increase in annual building rates, with 7,700 homes to be completed over the next five years.

6.128 Most of these homes will be delivered through urban extensions of Cambridge and Cambourne, or the creation of new developments proposed at Bourn Airfield, and two new towns at Northstowe and Waterbeach. The fall in the annual number of births and other demographic changes have resulted in a reduction in the roll in some parts of the district. Despite this, the pattern is mixed with the district having experienced a relatively high influx of families from Ukraine which has put pressure on the roll at some schools.

6.129 Within the Impington Rural SPPA, increased demand for primary school places in Histon and Impington as a result of demographic changes, inward migration and infill housing development has led to the council working with schools to secure an additional form of entry. With an outline planning application for 6,500 homes at Waterbeach Barracks being approved, the developer has indicated that the first phase of 1,600 homes has been completed, with a new primary school set to open. A second application for 4,500 homes adjacent to the Barracks site has also been granted outline planning permission, with it being likely that additional primary schools will be required at an early stage of development.

6.130 In South Cambridgeshire, Cambridgeshire County Council has responded to pressures in in the last two years through:

- Anglian Learning Trust being approved to run a new 3FE primary school within Waterbeach New Town; and
- The Council supporting an application to change the age range of Northstowe Primary School from 11-19 to 4-19 which has been effective from September 2024, offering 630 primary school places.

Table 6.7 Existing Primary School Capacity

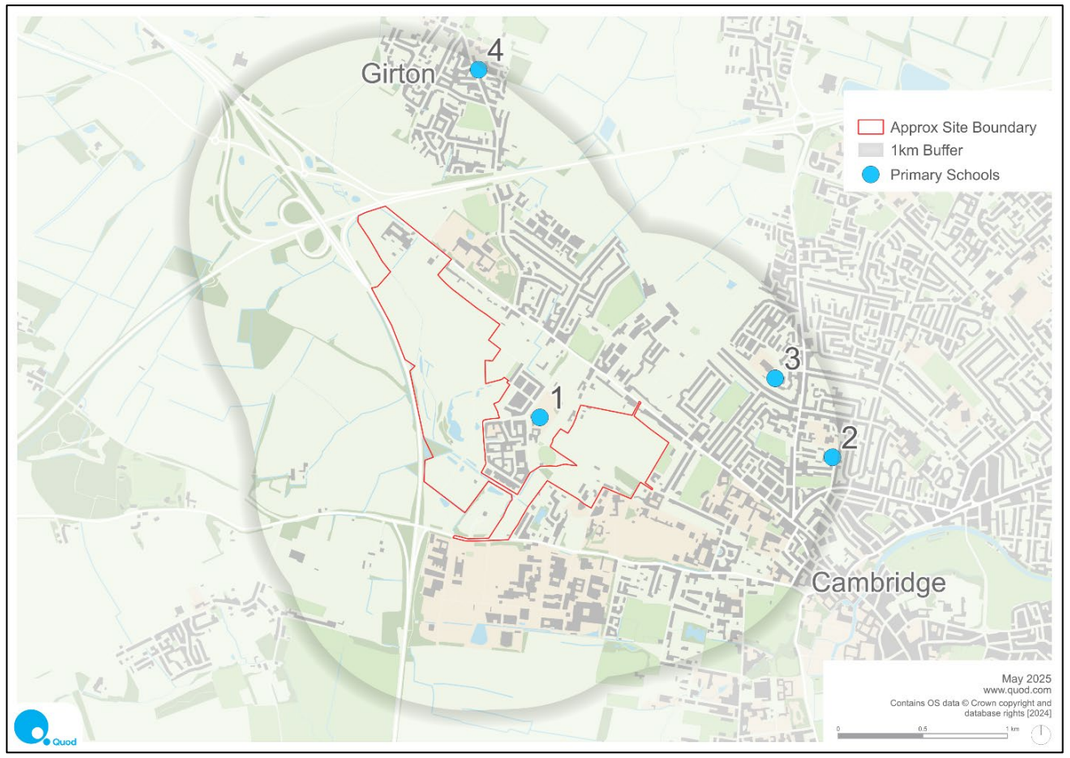
Map Ref.	Name of School	Planning Area	Number on Roll	Current Capacity	Surplus Places (no.)	Surplus Capacity (%)
1	University of Cambridge Primary School	Cambridge City (North of River Cam) Primary	626	630	4	1%
2	St Luke's CofE Primary School	Cambridge City (North of River Cam) Primary	94	135	41	30%
3	Mayfield Primary School	Cambridge City (North of River Cam) Primary	400	420	20	5%
4	Girton Glebe Primary School	Impington Rural 1 Primary	185	210	25	13%
TOTAL			**1,306**	**1,395**	**90**	**6%**

Note: Negative surplus has been counted as zero capacity

[33] *Department for Education, (2025). Schools, Pupils and their Characteristics.*

[34] *Cambridgeshire County Council, 2023. Cambridgeshire's 0-25 Education Organisation Plan (2023-2024)*

Figure 6.5 Primary Schools within 1km of the Site



Secondary Schools

6.131 Secondary schools have been considered within a 5km radius as shown in Figure 6.6.

6.132 According to the Annual School Census Data (2025) there are seven secondary schools within a 5km catchment of the site, with surplus capacity of 122 places, equating to 2% - as detailed in Table 6.8.

6.133 The closest school to the site is Chesterton Community College, which currently has no surplus capacity.

6.134 Cambridgeshire County Council's latest education organisation plan[35] suggests that the secondary roll in the city increased up to 2023, peaking with the year 7 intake in 2023/24. Intakes are forecast to remain close to capacity for the next few years and the secondary roll is forecast to continue to increase. There is pressure on places in the north of the city.

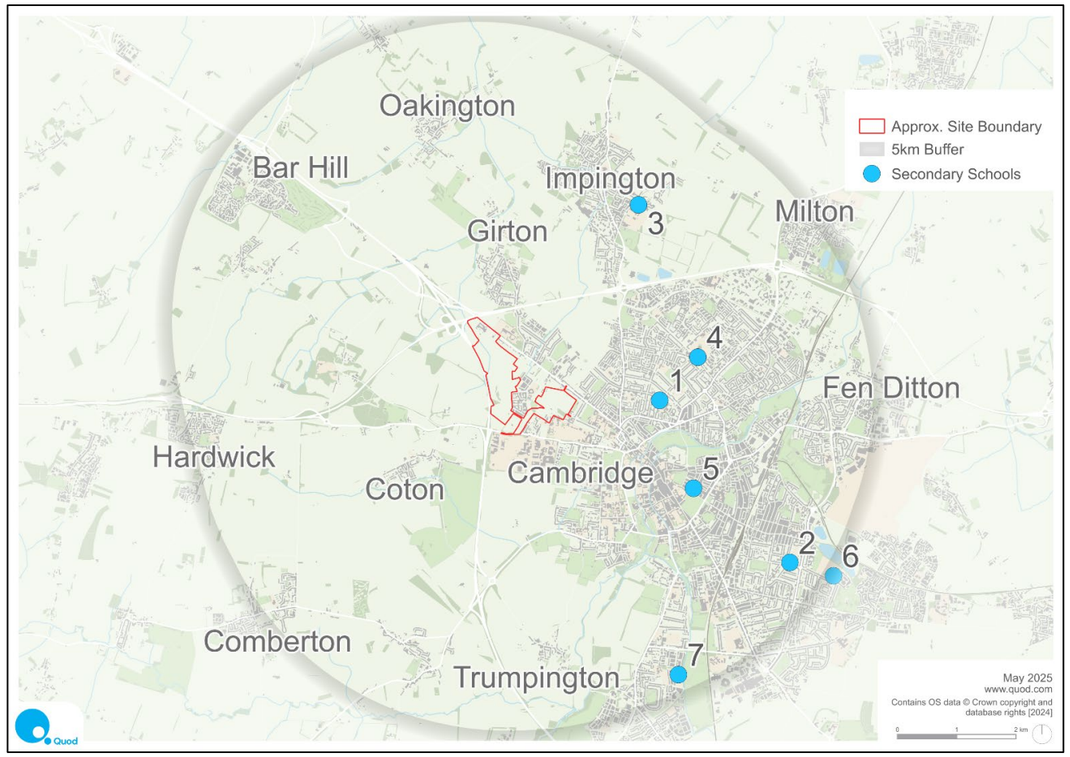
6.135 In Cambridge City, Cambridgeshire County Council has responded to pressures experienced within the last two years through:

- Monitoring Trumpington Community College (which is intended to operate as 5FE but is currently operating at 4FE) – A feasibility study is being undertaken to address the school's concerns about the suitability of the accommodation;
- Working with the trusts operating the two secondary schools north of the river to manage demand for places;
- A small expansion in capacity at St Bede's has taken the capacity to 6FE and the council is supporting a small expansion of North Cambridge Academy to allow it to admit an additional 5 pupils per year group; and
- The planned creation of a new school to serve the new housing developments in the north-west of the city. Delays in the commencement of development at Darwin Green mean that the opening date of this school continues to be kept under review. The intention is to deliver a 6FE school, offering 900 places, it will open with a smaller PAN and grow gradually to 6FE as the developments are built out and demand for places rises. It is currently planned to open in September 2026.

Table 6.8 Existing Secondary School Capacity

Map Ref.	Name of School	Number on Roll	Current Capacity	Surplus Places (no.)	Surplus Capacity (%)
1	Chesterton Community College	1,035	900	0	0%
2	Coleridge Community College	571	600	29	5%
3	Impington Village College	1,197	1,200	3	0%
4	North Cambridge Academy	689	750	61	8%
5	Parkside Community College	678	600	0	0%
6	St Bede's Inter-Church School	938	900	0	0%
7	Trumpington Community College	571	600	29	5%
Overall Total		**5,679**	**5,550**	**122**	**2%**
Note: Negative surplus has been counted as zero capacity					

Figure 6.6 Secondary Schools within 5km of the Site



[35] *Cambridgeshire County Council, 2023. Cambridgeshire's 0-25 Education Organisation Plan (2023-2024)*

Primary Healthcare

6.136 There is one GP surgery within 1km of the site, Huntingdon Road Surgery, which is shown in Figure 6.7.

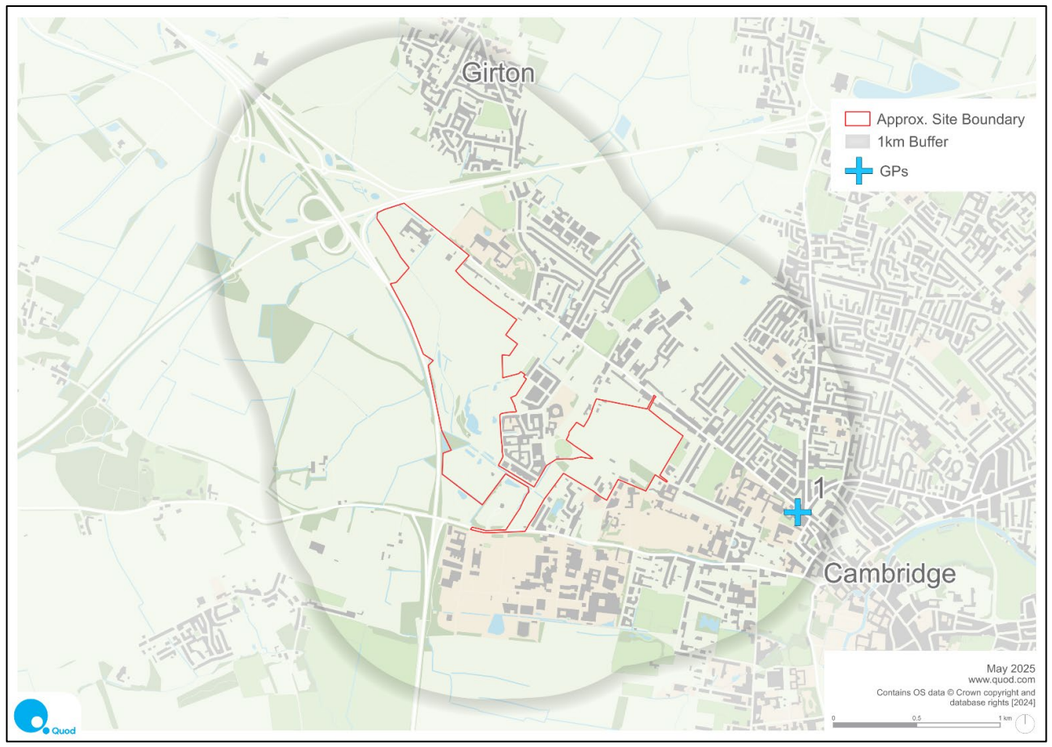
6.137 The surgery has 2,267 registered patients per FTE GP, as set out in Table 6.9, which is higher than the average for the PCN and ICB but below the national average as outlined below.

6.138 Phase 1 of the 2013 OPP has provided space for a new GP facility as part of the wider masterplan. This facility was planned for at the time of the 2013 OPP with the intention to serve the new community accommodated by the development. At the time of writing, the Applicant is working with Local NHS teams with plans to open the health centre to residents in 2026.

Table 6.9 GP Surgeries within 1km of the Site

Map Ref.	Practice Name	Distance from Site	Patient List Size	FTE GPs	Patients per GP
1	Huntingdon Road Surgery	750m	23,324	10	2,267
Cantab Medical Practices PCN Average			51,705	32	1,641
CCC Average			163,308	115	1,425
Cambridgeshire and Peterborough ICB Average			1,056,627	596	1,773
England (National Average)			36,760,000	28,100	2,270

Figure 6.7 GP Surgeries within 1km of the Site



Open Spaces

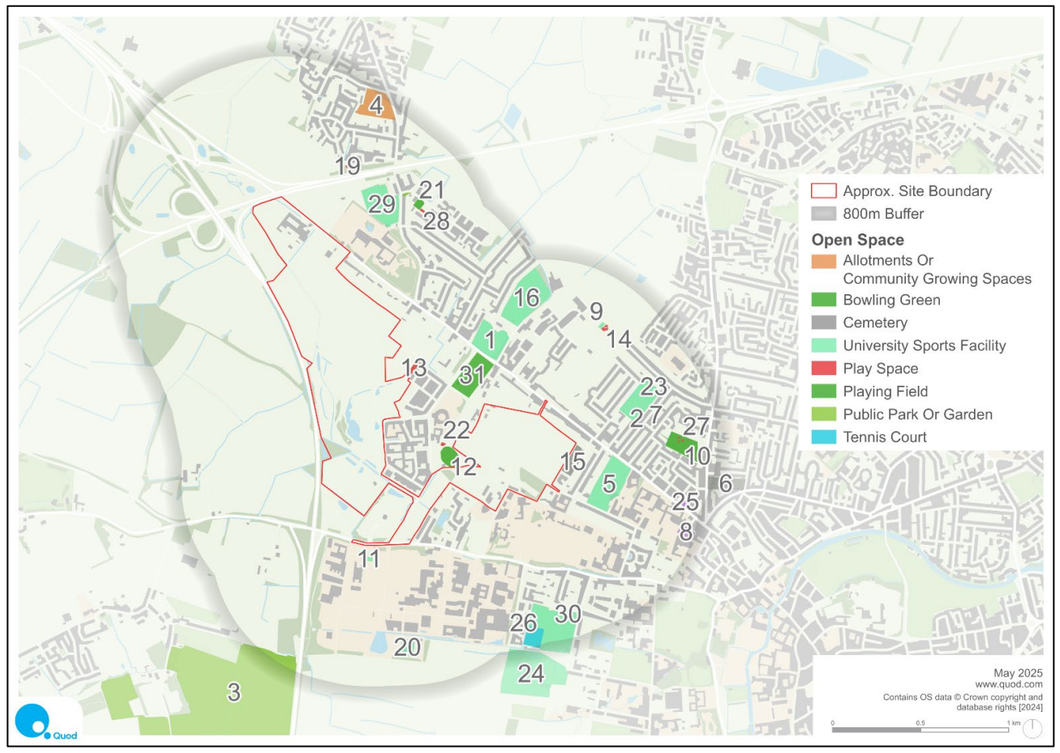
6.139 An assessment of existing open space and playspaces has been undertaken within 800m of the site, as shown in Figure 6.8. There is one public park within 800m, Coton country park, which is south of the site (Figure 6.8 – Ref. 3).

6.140 There are two playspaces near the site (Figure 6.8 – Ref. 22 and Ref. 13) as well as an additional six within 800m of the site. There is one community garden within 800m of the site – Girton Allotments (Figure 6.8 – Ref. 4).

6.141 There are two existing publicly available playing fields near the site (Figure 6.8 – Ref. 12), with a further one located with 800m of the site. There are also eight university sports facilities (University of Cambridge) within 800m of the site, these are not available for community use.

6.142 The Planning Obligations SPD (Updated 2023)[36] sets out that on-site provision of open spaces is required in developments which demonstrate sufficient demand.

Figure 6.8 Open Space within 800m of the Site



[36] *Cambridge City Council, 2023. Planning Obligations Strategy Supplementary Planning Document (Updated 2023)*

Community Centres

6.143 Community centres have been considered within a 1km catchment of the site. There are two community centres within 1km this catchment as set out in Table 6.10 and Figure 6.9 below.

Table 6.10 Community Centres within 1km of the Site

Map Ref.	Name	Category
1	Storey's Field Centre	Council-managed Community Centre
2	Bermuda Community Room	Council Managed Community Centre

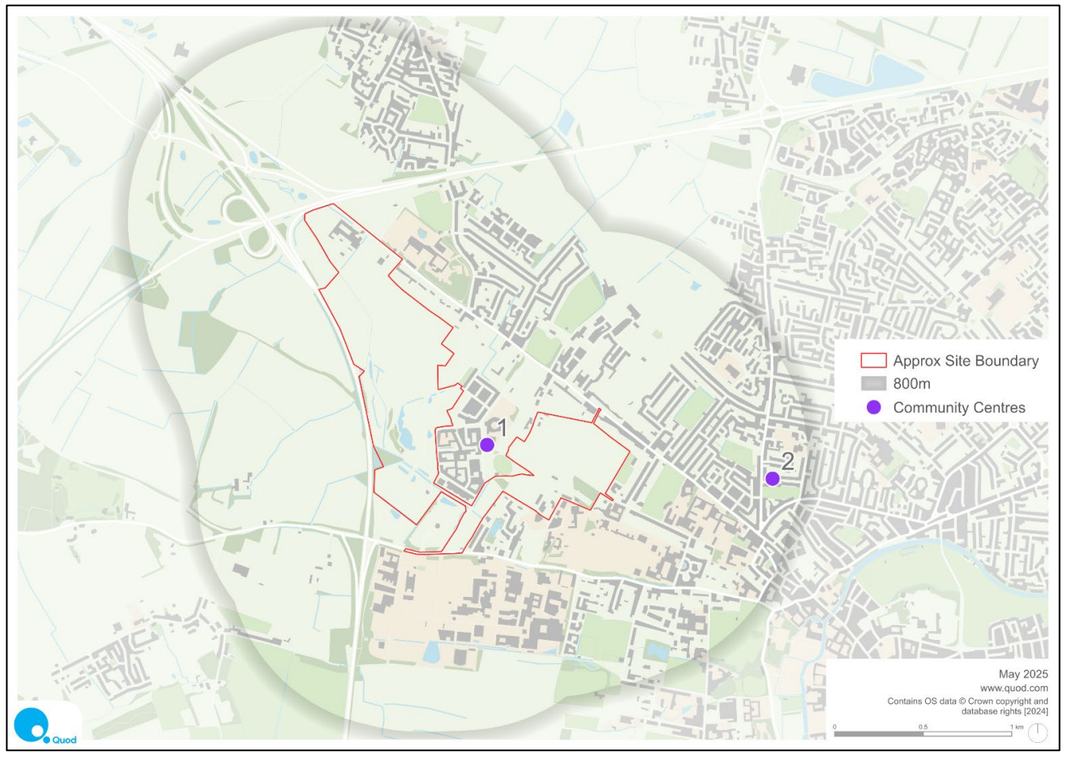
6.144 The closest community centre to the site is Storey's Field Centre, a purpose-built facility delivered during Phase 1 of the 2013 OPP. The facility offers a main hall with 180 seats, other spaces available include a studio and meeting room.

6.145 All spaces are available for hire for a fee. The fees vary. It is a layered structure offering local people and not for profit groups a subsidised rate. This includes discounts offered to citywide groups and organisations.

6.146 The centre is open for community activities between Monday to Wednesday and available for one-off bookings from Thursday to Sunday and hosts a wide programme of activities including exercise classes (e.g. yoga, Zumba and pilates), children sessions (e.g. language classes, sewing clubs, dance), clubs (e.g. Chess Academy, Lego Club) and adult classes and groups (e.g. singing, painting).

6.147 Bermuda Community Room seats 40 persons and is equipped with a kitchen. It currently hosts events such as book swaps and groups and classes.

Figure 6.9 Community Centres within 1km of the Site



Library Services

6.148 Library services have been considered within CSC considering strategic plans for the service (including online and mobile services).

6.149 There are a total of 23 permanent libraries across CSC, most of these lie within Cambridge City and its outskirts, whilst the rest are generally located in larger villages with recent development.

6.150 There are a total of 154 mobile libraries across the CSC. The majority of these (94%) provide a monthly visit taking place at a regular slot between 09:30 and 16:30. Stop durations vary from 15 minutes to 1.5 hours.

6.151 The three closest libraries to the site are Arbury Court Library (Figure 6.10 – Ref. 1), Cambridge Central Library (Figure 6.10 – Ref. 2) and Milton Road Library (Figure 6.10 – Ref. 3). The largest of these is Cambridge Central Library which offers photocopying, printing, scanning, computer, book hire and meeting room hire services.

6.152 There are several mobile libraries within proximity to the site as set out in Table 6.11 below:

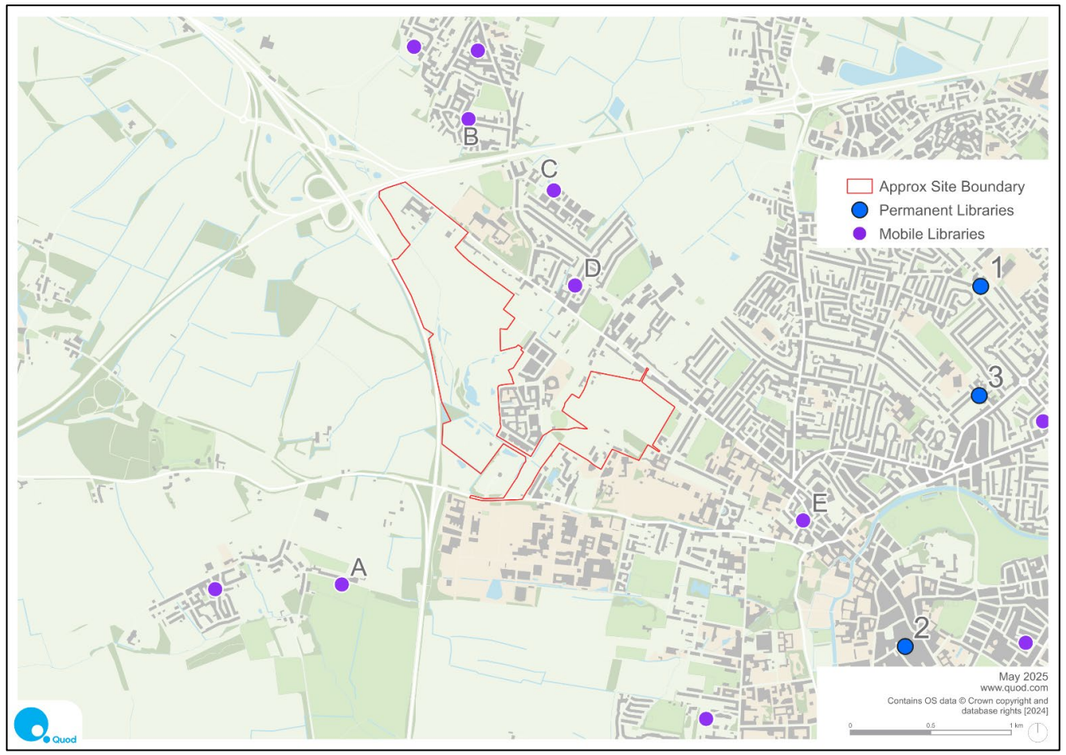
Table 6.11 Nearest Mobile Library Services

Map Ref.	Stop Location	Frequency	Stop Duration
A	Coton Close	Monthly	35 minutes
B	St Vincents Close	Monthly	35 minutes
C	Abbeyfield	Monthly	45 minutes
D	Thornton Court	Monthly	20 minutes
E	Storeys House	Monthly	30 minutes

6.153 The mobile libraries were set up to help more people use Cambridgeshire Libraries' services. The vehicles carry up to 3,000 items of stock including books and audiobooks on CD and cassette. These services work in tandem with the digital services and books can be requested online for collection at the mobile libraries.

6.154 In addition to the publicly available services, it is likely that several of the future residents onsite will benefit from access to University of Cambridge library facilities due to the provision of student homes and university housing.

Figure 6.10 Library Services within Proximity to the Site and Across CSC



Future Baseline

6.155 As outlined in the '*Assessment Methodology'* section of this ES chapter, once construction commences on the Proposed Development the final stages of Phase 1 of the 2013 OPP will be delivered or under construction. At the time of drafting this assessment, five plots were recently completed (not yet occupied) or under construction and therefore not accounted for in the above baseline information.

6.156 All five plots are delivering market housing.

6.157 Applying the detailed yields outlined in the North East Cambridge Area Action Plan described in the '*Assessment Methodology'* the remaining plots of Phase 1 of the 2013 OPP would accommodate the population set out in Table 6.12.

Table 6.12 Future Baseline

Phase 1 Plot	Units	Estimated Population	Early Years Yield	Primary School Yield	Secondary School Yield	GP Demand (FTE) (ICB Average 1,773) (National Average 2,270 patients per GP)
Lot 4	88	179	11	8	4	0.1 0.1
M1*	249	562	44	44	30	0.3 0.2
M3	106	181	7	5	2	0.1 0.1
M4 / M5	160	339	24	23	16	0.2
						0.1
S1 / S2	373	698	37	32	20	0.4 0.3
TOTAL	**976**	**1,959**	**123**	**112**	**72**	**1.1** **0.9**

**It should be noted that these figures reflect both M1 and M2 plots as information is not available for M1 in isolation*

6.158 Together, the remaining plots would deliver 976 market homes which would contribute to meeting housing needs.

6.159 The remaining plots would accommodate an estimated additional population of 1,959 calculated using the detailed yields as outlined in supporting papers to the North East Cambridge Area Action Plan. This population would create demand for social infrastructure and facilities.

6.160 The plots would accommodate an estimated 112 primary school children (equating to 0.5 FE) and 72 secondary school children (equating to 0.5 FE). Phase 1 of the 2013 OPP included delivery of new education facilities – the University of Cambridge Primary School opened in 2015. The requirement under the agreed S106 was for the delivered school to meet the primary demand arising from the 2013 OPP.

6.161 As outlined in the '*Baseline Conditions'* section of this ES chapter, according to latest data sources this school is currently at capacity with only 7 surplus places. Data from the school reveals that currently only 21% of pupils live in the area covered by the 2013 OPP. Over time more applications from masterplan residents will displace children travelling from elsewhere based on the nearest distance to the front gate principle.

6.162 In addition to the Phase 1 delivery, there is planning infrastructure provided in cumulative scheme, Darwin Green. This is proposed to deliver a 2FE primary school (providing 420 primary places) and 6FE secondary school (providing 900 secondary places).

6.163 The 2013 OPP included committed funds to secondary school provision, which have and will be allocated to the provision of a new secondary school at Darwin Green. This school is intended to serve new housing developments within the north-west of the city and will be run by Meridian Academy Trust. In its final form it will be a 6FE school but will open with a smaller PAN growing to full capacity as developments are built out.

6.164 The plots are estimated to generate demand for up to 1.1 FTE GP resource – calculated using the ICB average of 1,773 registered patients per NHS GP. The provision of a primary healthcare facility in Phase 1 was anticipated to meet the primary healthcare demand arising from the wider masterplan. The centre is 700m^2 GIA and construction has been completed in accordance with the terms of the 2013 OPP S106 agreement. The Cambridgeshire and Peterborough ICB has forecast that the facility will be operational by 2026, pending lease agreements and internal fit-outs.

6.165 The 2013 OPP S106 agreement included details on the amount of space required to meet the needs for Phase 1 residents with regard to sports facilities, playspace, and allotments.

6.166 Phase 1 Amenity Cluster A and Amenity Cluster B will include provision of open space, playspace and sports pitches. This includes informal open space, equipped playspace, informal / play on the way playspace, a running route, two 9 a side football pitches and three courts available for various sports. The total amount and type of space to be delivered is outlined below:

- Outdoor sports provision (playing pitches for various sports types and informal and formal grass spaces) – 42,260m^2
- Playspace – 17,900m^2; and,
- Allotments – 3,505m^2

6.167 As outlined above, the provision exceeds that required by policy for Phase 1 resulting in an excess of provision across Phase 1.

6.168 The future baseline assumes that the remaining plots of Phase 1 of the 2013 OPP would be complete by the time works commence on-site for the Proposed Development. Therefore, the assessment has been carried out against the future baseline.

RECEPTORS AND RECEPTOR SENSITIVITY

Existing Receptors

6.169 Table 6.13 and Table 6.14 below set out existing and introduced receptors, respectively, and their sensitivity

Table 6.13 Existing Receptors

Receptor	Sensitivity (Scale)		Rationale
Existing site occupiers	Medium (Site)		The site's existing occupants will be directly affected by the Proposed Development and may take time to adjust to a change in location, however they are all fully aware of the proposals (and many are directly employees of the University) and will have time to plan for and adjust to the change.
The Construction Industry and Its Employees	Low (Region)		The construction industry is assessed at a regional level due to the mobility of the construction workforce. There are 209,620 construction workers in the East of England.
Housing Need	Medium (CSC)		Based on figures reported across CCC and SDSC, the CSC has experienced strong delivery of housing against targets. Despite this, housing in Cambridge is in high demand and there is a national housing shortage.
Local Economy	Low (IIA)		Accessibility of employment is key to the success of a population. Baseline analysis shows the IIA has lower unemployment rate than comparators (except the regional level) and additionally had higher proportions of residents in managerial/technical/professional qualifications than all other comparators.
Local Social Infrastructure	Primary Schools	Medium (Local)	There is currently a surplus capacity of 4% primary places within 1km of the site, indicating that there is some capacity. The primary school on-site has no surplus capacity but the majority of pupils come from off-site (choosing this school because of its reputation, and not because it is their closest school). Under the "distance to the school gate" principle, the school catchment will adjust as the number of pupils living on-site increases.
	Secondary Schools	Medium (Local)	There is currently a surplus capacity of 2% in the secondary schools within 5km of the site, indicating that there is some capacity albeit this may be limited. There are plans for a new 6FE school in north-west Cambridge which will provide additional capacity.
	Healthcare (GPs)	Medium (Local)	The average patient list size across the GP practice within 1km is above the PCN and ICB averages but below the national average.
	Open Space & Playspace	Medium (Local)	There are 3 open spaces within 800m of the site and provision has already been made on-site as part of Phase 1.
	Community Centres & Libraries	Low (Local)	There are 2 community centres within a 1km catchment of the site. There are five mobile library stops within close proximity to the site but the closest permanent library is outside a 1km catchment of the site.

Introduced Receptors

Table 6.14 Introduced Receptors

Receptor	Sensitivity	Rationale
Residents living within the homes, new employees working on site and visitors to the site	High (Site)	New residents will require good access to social infrastructure, amenities and employment, and therefore are considered highly sensitive to local provision.

EMBEDDED MITIGATION

6.170 The ways in which socio-economic effects have been or will be avoided, prevented, reduced or offset through design and / or management of the Proposed Development are outlined below. These are inherent to the scheme and as such are taken into account as part of the assessment of the potential effects. Proposed enhancements are also described where relevant.

Enabling, Demolition and Construction

6.171 Measures will be undertaken to minimise disruption to neighbouring areas as outlined in the Outline CEMP submitted with the planning application. Whilst these interventions do not directly relate to socio-economics, they could indirectly affect socio-economic receptors, including the local residents, businesses, employees and the local economy. The management of the construction site to minimise noise, dust, air pollution and safety risks will help to minimise potential amenity and disruption effects on receptors across the study areas. The disruption of these effects during construction works is assessed across other technical chapters in this ES.

Completed Development

6.172 The Proposed Development forms part of a wider masterplan; the 2013 OPP (North West Cambridge Development Masterplan). The masterplan received planning permission in 2013 with Phase 1 under construction with several plots delivered and operational. To support the placemaking vision, much of the social infrastructure needed to support the wider masterplan was delivered early within Phase 1. This has been outlined within the *Future Baseline* and includes delivery of:

- The University of Cambridge Primary School which accommodates 3FEs (630 pupils as noted in the '*Baseline Conditions'* section of this ES chapter);
- 700m^2 Gross Internal Area (GIA) floorspace for primary healthcare facility which is due to open in 2026. (GP);
- Storey's Field Community centre; and,
- 44,170m^2 of sports facilities, allotment and playspace provision.

6.173 The Proposed Development incorporates embedded socio-economic mitigation measures within the redline boundary in the form of the on-site delivery of facilities and non-residential floorspace. This includes delivery of:

- Flexible Use Class E(a) to Use Class E(f) accommodating a range of uses including supporting retail, nursery, health, indoor sports and recreation;
- Up to 40,000m^2 of employment floorspace (Use Class E(g) / Sui Generis Research Uses);
- Up to 60,000m^2 of academic floorspace (Use Class F1(a));
- Delivery of open space; and,
- Delivery of playspace.

POTENTIAL EFFECTS

Enabling, Demolition and Construction

Loss and Displacement of Existing Uses

6.174 As outlined in the '*Baseline Conditions*' of the ES chapter, the site currently accommodates employment uses in the forms of university research facilities (Barcroft Centre), Gravel Hill Farm and CASP. CASP is to remain on-site and therefore the displacement of this use is scoped out of this assessment (10 FTE jobs retained).

6.175 Information from the Applicant outlines that currently 53 FTE employees are accommodated on-site (8 FTE on-site roles within the Barcroft Centre and 45 FTE jobs in Gravel Hill Farm). It is understood from the Applicant that the employment from the Barcroft Centre is expected to be relocated to other University Farm sites resulting in a marginal net job loss.

6.176 As set out in the '*Baseline Conditions*' section of this ES chapter, some buildings within Gravel Hill Farm have already changed use being used as offices accommodating the site management team for the Proposed Development.

6.177 The demolition and construction of the Proposed Development would result in disruption to these jobs and businesses as they would need to relocate on-site or off-site.

6.178 Following completion, the Proposed Development includes provision of significant non-residential floorspace including flexible Use Class E(g), academic floorspace and flexible Use Class E(a)-(f). Overall, there would be a net gain in commercial floorspace compared to the baseline conditions. The Proposed Development would therefore support employment in the local labour market through provision of non-residential floorspace as well as new homes.

6.179 In this context and the level of commercial floorspace capable of being provided within the Proposed Development, and the pipeline of future commercial development in the area arising from nearby development proposals, the loss of this floorspace is considered to be of a low magnitude of impact.

6.180 The likely effect of the Proposed Development in loss of existing uses (medium sensitivity) would therefore be temporary, direct, Minor Adverse (not significant) at the site level.

Enabling, Demolition and Construction Employment

6.181 The demolition and construction phase of the Proposed Development would generate employment within the construction industry. It is estimated that there would be an approximate average of 1,150 FTE of construction workforce required over the duration of the estimated 10-year demolition and construction period.

6.182 Construction employment is highly mobile and therefore assessment of the construction works is best considered at the regional (i.e. East of England) level. In a regional context (there are 209,620 construction workers in the East of England), the impact of 1,150 FTE of construction workforce is considered a 'low' magnitude of impact on the construction industry (low sensitivity).

6.183 Whilst it is acknowledged that additional employment generated within the construction sector will be beneficial, the scale and significance of the effect in the case of the Proposed Development would be Negligible (not significant) at the regional level.

Phasing

6.184 The Proposed Development would be completed and delivered in several phases (refer to **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**). Given the outline nature of the Proposed Development, it is not possible to undertake a detailed phase by phase assessment of impacts. The final phasing will be determined through the submission of RMAs.

6.185 The delivery of residential elements will be phased and therefore the effect on social infrastructure including schools and GP surgeries would be incremental and will not impact upon existing facilities in a single year. The assessment below provides an assessment of the completed Proposed Development once fully delivered and occupied.

6.186 Access to services during phasing is considered qualitatively where possible – this includes access to open space, playspace and amenity space to ensure continued access for new residents as detailed below.

Completed Development

Employment

6.187 The Proposed Development would deliver the following floorspaces accommodating employment on-site:

- Use Class E: Flexible employment generating floorspace (E(g));
- Sui Generis: Flexible employment generating floorspace in research and development;
- Use Class E: Commercial, service and business class (E(a) – E(f));
- Use Class F1: Learning and non-residential institution (F1(a));
- Use Class C2: Senior Living Space; and
- Sui Generis: PBSA

6.188 As outlined in the '*Assessment Methodology*' section of this ES chapter, the assessment has been carried out on the Proposed Development 'worst-case' scenario with the maximum parameters amended to reflect lowest level of employment.

6.189 Table 6.15 sets out the commercial floorspaces proposed and estimated jobs which could be accommodated by the Proposed Development.

Table 6.15 Estimated Employment

Use Class	GEA	GIA	NIA	Density Range	Minimum Jobs	Maximum Jobs
Non-Residential Uses						
Use Class E(g) / Sui Generis Research Uses	40,000	36,800	29,440	$10m^2$ to $60m^2$ per employee applied to NIA	490	2,940
Academic	60,000	55,200	44,160	$65m^2$ to $70m^2$ per employee applied to GIA	790	850
Flexible Use Class E(a)-E(f) (supporting retail, nursery, health, indoor sports and recreation)	3,500	3,220	2,576	As outlined in '*Assessment Methodology*'	30	245
Non-Residential Total					**1,310**	**4,035**
Residential Uses						
PBSA	1,800 units			50 to 70 PBSA bed spaces per job	25	35
Senior Living	6,500	5,980	4,784	1 job per $26m^2$ NIA	185	185
Residential Total					**210**	**220**
TOTAL					**1,520**	**4,255**

6.190 Due to the flexibility of uses possible under Use Class E (including both Use Class E(g) and the Flexible Use Class E(a)-E(f)), a range of jobs could be accommodated by this floorspace – 1,520 to 4,225 gross jobs.

6.191 The IIA currently accommodates 10,200 jobs as outlined in the '*Baseline Conditions*' section of this ES chapter, therefore the lower range (reflecting the likely worst-case) equates to 15% of current local jobs. This is therefore considered a medium magnitude of impact at the IIA level.

6.192 The non-residential floorspace includes provision of academic floorspace alongside homes for key workers from the university. The Cambridge economy makes a significant contribution to the UK economy and is a top

priority development zone for the Government[37]. The knowledge intensive and innovation-led economy supports economic growth which is noted as a local and national priority[38]. The delivery of academic (Use Class F1(a)) and research and development (Use Class E(g) / Sui Generis) floorspace will provide additional floorspace to support the local economy. The provision of KWH will provide essential housing at subsidised rents to university and/or approved affiliated institutions ensuring the talent and skills required to support these knowledge intensive sectors is accommodated in Cambridge. Therefore, the provision of homes and floorspace is, qualitatively, considered a medium magnitude of impact at the IIA level with regard to the local economy.

6.193 The combined effect of jobs (medium magnitude) alongside homes and commercial floorspace (medium magnitude) is considered to be a high magnitude of impact. Therefore, the effect of the Proposed Development (high magnitude of impact) on the local economy (low sensitivity) would be a permanent, direct Moderate Beneficial effect at the IIA (**significant**).

6.194 As set out in the '*Assessment Methodology*' section, the approach to calculating end-use employment tests the minimum and maximum jobs potentially accommodated within the total proposed commercial floorspace. It is unlikely that the proposed floorspace would come forward in these extremes and the jobs accommodated within the Use Class E uses on-site would likely fall between this range. On that basis it could be reasonable to assume that the likely employment on-site, accommodated by the Use Class E floorspace would be around the midpoint of this range, 2,890 jobs.

6.195 The Illustrative Masterplan non-residential mix provides an indication of how floorspace may be occupied providing more detail on the split of floorspace for the Use Class E(g) / Sui Generis floorspace between office and mid-tech uses. This removes some of the flexibility that is provided in the maximum parameters (all floorspace as general Use Class E(g) / Sui Generis) which results in a lower job number. An assessment of this floorspace using methodology as outlined above and within the '*Assessment Methodology*' results in a range of 3,130 to 3,730 jobs – above the mid-point of the Proposed Development.

Housing Delivery

6.196 The Proposed Development would deliver new homes. The Illustrative Masterplan housing mix has been developed to inform this assessment with delivery of 3,742 homes (including KWH) and 1,730 PBSA units. This is considered the 'worst-case' for housing delivery. These residential dwellings would contribute to the delivery of local authority housing targets - against the combined 20 year target of 33,500 across the City of Cambridge and SCDC, the Proposed Development would deliver 10% of the need. Including PBSA using the same metric as the National Housing Delivery test, this increases to 13%.

6.197 This is considered to be a medium magnitude of impact. It is assessed that the likely effect of the Proposed Development on housing delivery (medium sensitivity receptor) would be direct, permanent, Moderate Beneficial at the CSC level (**significant**).

Population

6.198 As set out in the '*Assessment Methodology*' section of this ES chapter, the population accommodated by the Illustrative Masterplan and Maximum Parameter housing scenarios have been modelled using 2021 Census data, survey data and policy guidance.

6.199 The results of both population and child yield calculations are presented in Table 6.16 below. Both the Illustrative Masterplan and Maximum Parameter housing scenarios are presented with the assessment based on the Maximum Parameter scenario. It should be noted that the calculations for both scenarios are based on an Illustrative Masterplan developed for the purposes of the ES assessment. The detailed housing mix will be determined in future RMAs.

Table 6.16 Summary of Future Population of the Proposed Development

Indicator	Illustrative Masterplan	Maximum Parameter
Residential Units (including KWH)	3,742	3,800
Purpose Built Student Accommodation (PBSA)	1,730	1,800
Senior Living	-	75
Population		
Residential Units	8,076	8,201
Purpose Built Student Accommodation (PBSA)	1,730	1,800
Senior Living	-	100
Social Infrastructure Calculations		
GP Demand (FTE) (ICB Average 1,773) (National Average 2,270 patients per GP)	5.5 4.3	5.7 4.4
Early Years Demand (0 to 3 years)	306 to 530	310 to 538
Primary School Demand (4 to 10 years)	345 to 736	351 to 747
Secondary School Demand (11 to 15 years)	232 to 466	236 to 474

Healthcare

6.200 The national average according to latest data sources is 2,270 patients per GP. This average has been used to calculate the level of healthcare provision required. On this basis, the new population would generate demand for the equivalent of 4.3 to 5.7 of a full-time GP's services.

6.201 As outlined above, the assessment is carried out against the Future Baseline which includes delivery and occupation of Phase 1. Therefore, the population expected to be accommodated across Phase 1 and the Proposed Development (under Maximum Parameters) is 5.3 to 6.8 FTE GP services.

6.202 The average list size within a 1km catchment of the site is 2,267 patients per GP which is above the PCN and ICB average but below the national average. This indicates there is limited capacity currently available at the local level (medium sensitivity receptor).

6.203 As outlined above, the Phase 1 of the 2013 OPP has provided space for a new GP facility (700m^2 GIA). The design of the facility includes a variety of clinical space including five consulting rooms for GP use. Therefore, the facility could feasibly support five FTE GPs. This would meet the needs of most of the population estimated as part of the Future Baseline and Proposed Development. There would be a slight shortfall in provision against the upper estimation of demand for 6.8 FTE GP services.

6.204 In the context of the delivery of this new facility alongside baseline provision, it is considered that the estimated population would have a low magnitude of impact at the defined local level (1km catchment).

6.205 It is therefore assessed that the effect of the Proposed Development on healthcare demand would be a permanent, direct, Minor Adverse effect at the local level (not significant).

6.206 Flexible Use Class E floorspace is proposed as part of the Proposed Development. Under Use Class E(e) provision of medical or health services is possible. Provision of health services on-site would offer potential mitigation but would require further stakeholder engagement to ensure it aligns with local NHS Estates Plans at the RMA stage.

[37] *Department for Science, Innovation and Technology (January 2025) Press Release Lord Vallance [online] Available at: https://www.gov.uk/government/news/minister-vallance-underlines-how-oxford-cambridge-corridor-ambitions-can-boost-whole-uk*

[38] *HM Treasury (January 2025). Press Release The Rt Hon Rachel Reeves MP [online] Available at: https://www.gov.uk/government/news/reeves-i-am-going-further-and-faster-to-kick-start-the-economy*

Education

6.207 The new residents living within the Proposed Development would increase the local demand on school places. The estimated child yield for the Proposed Development (under Maximum Parameters using the two methodologies outlined in the '*Assessment Methodology' section of this ES chapter*) indicates there would be 351 to 747 children of primary school age and 236 to 474 secondary school aged children.

6.208 According to the latest Annual School Census data set out in the '*Baseline Conditions*' section, there are 89 surplus places within the four primary schools within a 1km catchment of the site (defined local level), equating to 6% surplus capacity (medium sensitivity receptor).

6.209 The Proposed Development would generate demand for 351 to 747 primary school places which equates to approximately 1.7 to 3.6 forms of entry (FE). This is considered to be a high magnitude of impact at the defined local level (1km catchment).

6.210 As outlined above, the assessment is carried out against the Future Baseline which includes delivery and occupation of Phase 1. Therefore, the total primary school places expected to be accommodated across Phase 1 and the Proposed Development (under Maximum Parameters) is 463 to 860 -- equating to 2.2 to 4.1 FEs.

6.211 The Future Baseline outlines that places at the existing University of Cambridge Primary School (delivered within Phase 1) will prioritise residents of the 2013 OPP under the "distance to the school gate" principle. Taking into account the capacity of the primary school to serve the Proposed Development, the likely effect of the Proposed Development on primary schools would be direct, permanent, Minor Adverse (not significant) at the defined local level (1km catchment).

6.212 With respect to secondary school places, there is currently a surplus of 208 secondary school places within a 5km catchment of the site (medium sensitivity receptor). The Proposed Development is likely to create demand for 236 to 474 secondary school places equating to approximately 1.6 to 3.2 FE (medium magnitude of impact at the defined local level (5km catchment)).

6.213 As outlined above, the assessment is carried out against the Future Baseline which includes delivery and occupation of Phase 1. Therefore, the total secondary school places expected to be accommodated across Phase 1 and the Proposed Development (under maximum parameters) is 307 to 545 -- equating to 2.1 to 3.6 FE.

6.214 The likely effect of the Proposed Development on secondary schools would be direct, permanent Moderate Adverse at the local level (defined here as 5km catchment) (**significant**).

Community and Library Facilities

6.215 The residents accommodated by the Proposed Development may increase demand for community facilities such as community centres and libraries, however it is not possible to accurately predict or quantitatively assess the impact on the capacity of these facilities as their use varies amongst the population. Local authorities have a statutory duty to ensure there is sufficient provision of some of these community services for residents but provision is most often met by the private and charitable sector.

6.216 As set out in Table 6.15 the Proposed Development is proposing floorspace which if it came forward could accommodate an estimated 100 people within the care home facility. These facilities are particularly important for this population providing access to resources and community programmes.

6.217 The '*Baseline Conditions*' section of this ES chapter identified two local community centres (including Storey's Field which forms part of Phase 1) and mobile library services nearby. There are no existing permanent libraries within 1km of the site, however, many of the residents (key workers and students) will have access to the University of Cambridge owned and operated libraries. Additional demand from the Proposed Development's population is expected to have a low magnitude of impact on community centres and libraries (low sensitivity receptor). This will result in a Negligible (not significant) effect at the local level (defined as a 1km catchment) for community facilities and CSC level for library facilities.

Open Space and Playspace

6.218 The site does not currently include any formal open space. There are two publicly available playing fields and two playspaces within 800m of the site.

6.219 As set out in the '*Assessment Methodology*' section of this ES chapter, to reflect the 'worst-case' scenario the assessment of open space and playspace is based on the maximum housing parameters as this would generate the highest likely population.

6.220 The calculations for requirements are based on the North West Cambridge AAP for open space and in line with the S106 agreement for the 2013 OPP. Table 6.17 below outlines the requirements on-site.

Table 6.17 Open Space and Playspace Requirements (Maximum Parameters)

Category	Requirements	Population / Units	Demand (in ha)	Proposed Development Provision (Indicative) (ha)
Open Space				
Informal Open Space	1.8 ha per 1,000 people	8,201 within market and KWH units 1,800 students 100 within Use Class C2 units	18.18	44.42
Outdoor Space for Sport	1.2 ha per 1,000 people		9.96*	10.24
Allotments	0.4 ha per 1,000 people		3.32*	4.87
TOTAL			**31.45**	**59.53**
Playspace				
Children's playspace	0.65 per 1,000 units	3,800 residential units (reflecting worst-case as not all KWH will accommodate children)	2.47*	2.00**

** excludes PBSA*
*** shortfall to be met in Phase 1, as part of the Future Baseline*

6.221 The planning application for the Proposed Development is submitted in outline, and therefore the provision of open space and playspace is based on an illustrative landscape plan. The detailed design of these spaces would be considered at RMA stage.

6.222 The illustrative provision demonstrates that the demand for informal open space, outdoor space for sport and allotments is met on-site for the Proposed Development. As shown in Table 6.17, there is a substantial overprovision in informal open space.

6.223 There is a shortfall in the provision of playspace within the Proposed Development on-site under the illustrative design. However, as outlined above, the Proposed Development forms part of the wider North West Cambridge Development Masterplan, which includes Phase 1 of the 2013 OPP. The RMA to be submitted by the Applicant for Phase 1 Amenity Cluster A and Amenity Cluster B will deliver additional playspace that would address this shortfall.

6.224 The demand for playspace as noted in the 2013 OPP S106 agreement is for 1.3ha of children's playspace. The delivery of new playspace at Phase 1 Amenity Cluster A and Amenity Cluster B would result in a total provision of 1.79 ha of playspace across Phase 1 resulting in a 0.49 ha overprovision against the needs of Phase 1 alone. This overprovision would provide the required additional playspace for the future residents of the Proposed Development.

6.225 In accordance with the terms of the 2013 OPP S106 agreement, the delivery of the Phase 1 spaces is required prior to the occupation of the Proposed Development. The combined provision of open space and playspace across Phase 1 (including the future RMA for Phase 1 Amenity Cluster A and Amenity Cluster B) and Proposed Development is as follows:

- 48.54 ha provision of informal open space (against total demand of 26.1 ha);

- 14.97 ha provision of outdoor space for sport (against total demand of 14.16 ha);
- 5.22 ha provision of allotments (against total demand of 5.07 ha); and
- 3.79 ha of playspace (against total demand of 3.72 ha).

6.226 Therefore, the Proposed Development in the context of the Future Baseline (i.e. of the North West Cambridge Development Masterplan as a whole including the Proposed Development and Phase 1) will meet the required demand for all spaces across the Proposed Development. This is considered a low magnitude of effect.

6.227 The delivery of the Proposed Development's sports pitches, playspaces and allotments will be secured via the S106 agreement. It is anticipated that there will be restrictions on the occupation of the Proposed Development until the necessary spaces have been provided, including any relevant spaces being provided by the Phase 1 RMA for Amenity Cluster A and Amenity Cluster B.

6.228 The likely effect of the Proposed Development on open space and playspace (medium sensitivity receptor) would be Negligible (not significant) at all spatial levels.

Additional Spending

6.229 The Proposed Development would generate economic benefits for the local economy through indirect spending arising from new employees, residents and students:

- **Employee Spending** – based on a daily spend employees accommodated on-site (reflecting lowest range) would spend in the region of £4.8 million per year;
- **Household Spending –** based on an average weekly spend new households would spend in the region of £42.8 million per year. In addition, the senior living units are estimated to spend in the region of £750,000 annually; and,
- **Student Spending** – based on an average yearly spend the PBSA would spend in the region of £13.8 million per year.

6.230 Collectively, the spending impact of new residents and employees accommodated by the Proposed Development (high magnitude impact) on the local economy (low sensitivity receptor) would be indirect, permanent, Moderate Beneficial (**significant**) at the IIA and OIA level. The magnitude of impact would reduce to a medium magnitude of impact at the CSC level assessed as an indirect, permanent, Minor Beneficial (not significant) and reduce again to low magnitude of impact the regional level assessed as Negligible (not significant) at all other spatial levels.

SENSITIVITY TEST

6.231 As outlined in the '*Assessment Methodology' section of this ES chapter,* a sensitivity test has been carried out to test delivery of 50% KWH and 50% market housing based on the Maximum Parameters. This test has considered the effect on child yield only therefore only the potential effect on education is considered below. The effect on other assessments (i.e. Primary Healthcare, Open Space and Playspace) would be negligible.

6.232 The sensitivity test would generate an estimated demand for 381 to 847 primary school places which equates to approximately 1.8 to 4.0 forms of entry (FE). This reflects a 0.1 to 0.5 FE increase from the assessed Maximum Parameters scenario. This is considered to be in line with the assessment above with a high magnitude of impact at the defined local level (1km catchment).

6.233 With respect to secondary school places, the sensitivity test is likely to create demand for an estimated 256 to 535 secondary school places equating to approximately 1.7 to 3.6 FE. This reflects a 0.1 to 0.4 FE increase from the assessed Maximum Parameters scenario. This is considered to be in line with the assessment above as a medium magnitude of impact at the defined local level (5km catchment).

6.234 Therefore, the results would remain as concluded within the '*Potential Effects*' section of this ES chapter.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Enabling, Demolition and Construction Mitigation

6.235 No adverse effects have been identified at the Enabling, Demolition and Construction stage, therefore no mitigation or monitoring is proposed. All residual effects remain as set out above.

Completed Development Mitigation

6.236 Significant adverse effects have been identified in relation to effects on secondary education.

6.237 The local authority secures planning obligations and financial contributions towards social infrastructure, through S106 obligations which can be used to mitigate effects were necessary. The 2013 OPP included committed funds to secondary school provision. Since 2013 a plan for spending funds has emerged with a new school opening in 2026 in Darwin Green (just north of the Proposed Development) to serve new housing developments within the north-west of the city and will be run by Meridian Academy Trust – it will be a 6FE school that will open with a smaller PAN but will grow to 6FE as developments are built out.

6.238 Following this mitigation the effect of the Proposed Development on secondary education is determined to be Negligible (not significant).

Residual Effects

6.239 All of the residual effects resulting from the Proposed Development, are presented in Table 6.18, identifying whether the effect is significant or not.

Table 6.18 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Enabling, Demolition and Construction							
Loss and displacement of existing uses	Loss of uses currently on site	Minor Adverse	Not Significant	L	D	P	Lt
The construction industry and its employees	Generation of construction employment	Negligible	Not Significant	R	D	T	Mt
Completed Development							
Local economy and labour market	Provision of non-residential floorspace likely to accommodate 1,520 jobs based on a worst case scenario, provision of academic floorspace and key worker housing	Moderate Beneficial	Significant (CSC)	B	D	P	Lt
	Additional spending by new residents, employees and spending	Moderate Beneficial (IIA, OIA), Minor Beneficial (CSC); Negligible (region)	Significant (IIA, OIA); Not Significant (CSC); Not Significant (Region)	L,	I	P	Lt
Housing need	Delivery of new open market, key worker and student housing under the Illustrative Scheme	Moderate Beneficial	Significant	B	D	P	Lt
Local infrastructure and its users including new residents of the Proposed Development	Demand for primary education	Minor Adverse	Not Significant	L	D	P	Lt
	Demand for secondary education	Negligible	Not Significant	L	D	P	Lt

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
	Demand placed on primary healthcare facilities	Minor Adverse	Not Significant	L	D	P	Lt
	Demand for and provision of open space and playspace	Negligible	Not Significant	L	D	P	Lt
	Demand for community and library services	Negligible	Not Significant	L	D	P	Lt

Notes:
Residual Effect
- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

6.240 Projected demand and amendments to education capacity over the coming years has been identified within the *Future Baseline Conditions* section of this ES chapter.

Cumulative Effects Assessment

6.241 Prospective developments within the surrounding area could have cumulative socio-economic effects with respect to population, housing provision, employment, spending, and demand for social infrastructure such as schools, healthcare and open space.

Enabling, Demolition and Construction

6.242 The Proposed Development, together with the cumulative schemes would be expected to generate employment opportunities during demolition and construction. In the absence of detailed, commercially sensitive information, it is not possible to make a quantitative assessment of the employment generated from the demolition and construction stages of the cumulative schemes.

6.243 However, due to the mobility of the construction workforce and in the context of the size of the construction workforce at a regional level, it is expected that the overall effect on construction employment would be Negligible (not significant) at the regional scale.

Completed Development

6.244 The cumulative schemes propose delivery of new housing, employment floorspace and community facilities. These planned developments could have further cumulative socio-economic effects with respect to population, housing provision, employment, spending, and demand for social infrastructure such as schools, healthcare and open space.

Employment

6.245 The cumulative effects on employment have been assessed by reviewing the planning applications relating to the relevant schemes as presented in **(ES Volume 1, Chapter 2: EIA Methodology)**. Any amendment applications and Reserved Matters Applications (RMAs) to these cumulative schemes have also been considered where applicable. Standard assumptions in terms of job densities associated with different employment uses have been applied to the floorspace specified in the planning documents, using a minimum and maximum scenario. Where flexible use was indicated, an average number based on the listed potential use classes was applied to the minimum and maximum scenario.

6.246 Should all developments assessed come forward as planned, they would generate an estimated 14,900 to 15,400 jobs, depending on the final uses (high magnitude of impact). Considered alongside the Proposed Development (1,480 jobs in the 'worst case'), these schemes are be expected to have a direct, permanent, Moderate Beneficial (**significant**) effect on employment at the IIA level.

Housing Delivery

6.247 The cumulative schemes are expected to bring forward an estimated additional 3,000 homes, 650 PBSA and 70 senior living (C2 dwellings).

6.248 The cumulative schemes alongside the Proposed Development (minimum 3,744 units, 1,730 PBSA units and 75 senior living) would therefore be a significant contribution to local authority housing targets. Alongside the Proposed Development this is considered to be a high magnitude of effect. Therefore, the cumulative effect on housing provision is assessed to be direct, permanent, Major Beneficial at the CSC level (**significant**).

Community Facilities

6.249 The new population accommodated by these homes would create an increase in demand for community facilities such as education and healthcare facilities. Population assumptions have been made for this assessment of cumulative effects using the average household sizes for the various housing types (i.e. homes, PBSA and senior living) as outlined in the Assessment Methodology. This provides an estimate that the cumulative schemes would accommodate approximately 8,700 residents (including students and senior living residents) in addition to those accommodated by the Proposed Development.

6.250 Community facilities are being delivered within cumulative schemes. Most significantly, Darwin Green (Phase 1 - 07/0003/OUT; Phases 2 and 3 - 22/02528/OUT) will deliver a primary school (accommodating 2 forms of entry (FE); 420 places), a secondary school (accommodating 6 FE; 900 places), a health centre and a library (Darwin Green library).

6.251 The cumulative effect on healthcare facilities and education is not considered quantitatively as the catchment areas for the cumulative schemes will differ. Therefore, it would not be possible to undertake a proportionate assessment. It is assumed that appropriate mitigation has been agreed in the process of consenting each cumulative scheme and/or in the process of site allocation through the relevant local authority plan process.

Additional Spending

6.252 The new homes and jobs would generate additional spending. It is estimated that the new homes, PBSA and senior living and employees would generate up to £87 million annually. In the context of the local economy, alongside the Proposed Development (circa £62 million) this is considered to be a high magnitude of effect. This would have a positive effect on the local economy (low sensitivity receptor). It is therefore assessed that the effect would be Moderate Beneficial (**significant**) at the IIA and OIA level. The magnitude of impact would reduce to a medium magnitude of impact at the CSC level assessed as an indirect, permanent, Minor Beneficial (not significant) and reduce again to low magnitude of impact the regional level assessed as Negligible (not significant) at all other spatial levels.

Mitigation, Monitoring and Residual Effects

6.253 No adverse effects have been identified in relation to cumulative effects therefore no mitigation would be required and all residual effects would remain as stated above.

6.254 Overall, these cumulative schemes together with the Proposed Development, would deliver new housing, community infrastructure and generate new employment and have a positive impact on the local economy through increased spending, which together would have a beneficial effect in terms of socio-economics.

LIKELY SIGNIFICANT EFFECTS

6.255 No significant adverse residual socio-economic effects have been identified as a result of the Proposed Development.

6.256 Significant beneficial socio-economic effects have been identified for housing delivery, employment creation and economic impact and additional spending. Significant beneficial socio-economic cumulative effects have been identified in relation to employment, housing delivery and additional spending.,

Chapter 7: Traffic and Movement

TRIUM

TRAFFIC AND MOVEMENT	
AUTHOR	KMC Transport Planning
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Traffic and Movement** Annex 1: Baseline and Future Year Traffic Flows Annex 2: Road Links
KEY CONSIDERATIONS	This chapter of the ES assesses the likely significant effects of the Proposed Development with regard to traffic and movement. The assessment sets out the changes to the traffic flows and any resulting effects on delay, amenity, fear and intimidation, safety and severance during enabling, demolition and construction and operation of the Proposed Development. The Proposed Development includes the provision of a new primary transport route through the site (Cartwright Avenue). This ES chapter also considers the potential effects from redistribution of traffic along Cartwright Avenue.
CONSULTATION	An EIA Scoping Report was prepared and submitted to Greater Cambridge Shared Planning Service (GCSPS) in November 2024 (**ES Volume 3, Appendix: EIA Methodology – Annex 1**). An EIA Scoping Opinion was subsequently received on 23 January 2025 and is included within **ES Volume 3, Appendix: EIA Methodology – Annex 2**. This generally agreed with the scope of this ES chapter. The following comments were raised in the EIA Scoping Opinion and have been addressed in this ES chapter: • "The applicant should ensure that the transport data used in the ES and the TA are from the same source to ensure consistency between the two documents" *The ES chapter has been prepared using the same baseline traffic data, trip generation assumptions, and modelling outputs as set out in the Transport Assessment (TA) submitted with the planning application. This ensures consistency in methodology, forecast scenarios, and reported impacts.* • "The assessment should be undertaken in accordance with DfT Circular 01/2022 "The Strategic Road Network and the Delivery of Sustainable development" or subsequent iterations of the document, and other relevant guidance." *The assessment has been undertaken in accordance with DfT Circular 01/2022, with specific regard to the Strategic Road Network and the potential for significant impacts. The approach has also followed relevant guidance including IEMA's "Guidelines for the Environmental Assessment of Road Traffic".* • "National Highways have advised they agree with the inclusion of SRN11 junctions within the Study Area. Further to this, we request the Applicant to provide information on the trip distribution, providing flow diagrams which include the junctions with the SRN in the vicinity of the proposed development." *Outlined in detail within the TA, trip distribution has been derived from 2024 questionnaire surveys of existing residents in Eddington and 2011 Census Journey to Work data, prior to being refined to reflect local context. Flow diagrams showing forecast movements at key junctions are included within the TA and summarised in this ES chapter.* • "A Construction Traffic Management Plan (CTMP) should be submitted as part of a future planning application" A standalone CTMP is submitted with the OPA. The transport aspects of the Proposed Development have been subject to comprehensive pre-application discussions with the GCSPS, Cambridgeshire County Council (CCoC) as the local highway authority, and National Highways as the government agency body who maintain the Strategic Road Network (SRN).

ASSESSMENT METHODOLOGY

Basis of Assessment

7.1 The assessment is based on the maximum development quantum for the Proposed Development, as set out in **ES Volume 1, Chapter 4: The Proposed Development**. A comprehensive trip forecasting methodology has been derived, consistent with the core scenario presented in the supporting Transport Assessment. This includes trip rate and mode share assumptions derived, where possible, from surveyed data from Phase 1 of the 2013 Outline Planning Permission (OPP) and the nearby West Cambridge site.

7.2 Trip distribution has been informed by residential questionnaire responses and 2011 Census Journey to Work data (the most recently available data), using a zonal model with greater granularity closer to the site. Where appropriate further consideration has been given to changes to the journey to work destinations that have changed since the 2011 Census data was collected. The assessment reflects embedded mitigation, such as design-led sustainable transport measures incorporated into the Proposed Development, that leads to a higher mode share for non-car modes.

7.3 Phased delivery over a 10-year period has been assumed. Assessment years include:

- Baseline (2024);
- Redistribution along proposed Cartwright Avenue (2027);
- Interim (2033) – reflecting peak ongoing construction and partial occupation; and
- Completed Development (2038).

7.4 Each scenario incorporates committed development and background traffic growth.

7.5 The transport aspects of the Proposed Development have been subject to comprehensive pre-application discussions with the Greater Cambridge Shared Planning Service (GCSPS), on behalf of South Cambridgeshire District Council (SCDC) and Cambridge City Council (CCC) as the local planning authorities, Cambridgeshire County Council (CCoC) as the local highway authority, and National Highways at the government agency body who maintain the Strategic Road Network (SRN).

7.6 In relation to transport, the pre-application engagement has included discussions on:

- Geographical scope of assessment (Personal Injury Accident records, link and junction impact & capacity assessments);
- Trip generation approach and methodology;
- Transport modelling;
- Development of the masterplan from a transport perspective;
- Active travel strategy in terms of the masterplan design and connections to the wider area and off-site active travel improvements;
- Vehicular access strategy;
- Public transport strategy in terms of provision for public transport within NWC and strategy for improvements to public transport services and infrastructure; and
- Street design.

7.7 The assessment focuses on the local and strategic highway network within a defined study area, as agreed through scoping, based on trip distribution forecasts and expected changes in transport conditions. Further detail is provided later in this ES chapter.

Relationship Between the Future Baseline and Cumulative Scenario

7.8 According to IEMA Guidelines: Environmental Assessment of Traffic and Movement (hereafter referred to as the IEMA Guidelines), a clear distinction is made between the future baseline and the cumulative scenario, both of which are expected to be assessed separately as part of the environmental assessment process.

7.9 The future baseline typically incorporates forecast traffic growth derived from background trends (e.g., via TEMPro), while the cumulative scenario considers the additional impact of discrete developments within the agreed study area, including existing, approved, or 'likely to come forward' schemes.

7.10 In this assessment, however, the scenario development does not follow that conventional disaggregation. Only 'future baseline' scenarios have been provided, with no distinct cumulative scenario. As detailed later in this chapter, TEMPro growth has been applied exclusively to the M11 corridor to represent wider background development beyond the immediate study area. For all other links, future baseline flows have been developed using assumptions based on specific developments; an approach more typically associated with cumulative assessment under IEMA Guidelines. This avoids double counting in the future baseline scenarios assessed in this ES chapter. This approach was agreed with CCoC as part of scoping discussions on the Transport Assessment.

Defining the Baseline

7.11 The 2024 baseline reflects existing conditions and is based on a combination of Manual Classified Counts (MCC) and Automatic Traffic counts (ATC). ATC data was used to convert 12-hour classified counts into Average Annual Daily Traffic (AADT) and Average Annual Weekday Traffic (AAWT). Department for Transport (DfT) counts were used to inform flows on the M11/A14 corridor. Further details on the 2024 baseline traffic flows are provided in the TA submitted with the OPA.

7.12 Future baselines for 2027, 2033, and 2038 incorporate committed development traffic based on a review of relevant planning application documents. Developments have only been included in the appropriate assessment year where they are expected to be operational, in line with a desktop review of planning statuses and/or KMC's professional judgement and knowledge of site delivery. Where development-specific traffic data was not available or where sites are expected to impact only the strategic network, TEMPro-derived growth has been applied (limited to the M11 corridor to avoid double-counting).

7.13 A summary of the committed developments included in the future baseline assessment, and the basis for their inclusion, is provided in Table 7.1. Where traffic generated by a committed development is not expected to reach the study network, this has been determined as having 'no impact', based on a detailed review of the relevant transport assessments or planning application material.

Table 7.1 Committed Developments

Site	Planning Ref.	Basis	Future Baseline (FB) Inclusion
Darwin Green Phase 1	07/0003/OUT	Peak hour TFs	2027 onwards
Darwin Green Phases 2 & 3	22/02528/OUT	Peak hour TFs	2033 onwards
Girton College	22/00887/OUT	No impact	2027 onwards
National Institute of Agricultural Botany (NIAB)	21/03609/FUL	Peak hour TFs	2027 onwards
137 and 143 Histon Road	24/01354/FUL	No impact	2027 onwards
Grange Farm	21/02052/FUL	Peak hour TFs	2038 onwards
Cambridge West	16/1134/OUT	Peak hour TFs	2038 onwards
Cambridge East	No application submitted	TEMPro only	2038 onwards
Northstowe New Town Phase 3B	20/02171/OUT	Peak hour TFs	2027 onwards
West Cambourne	S/2903/14/OL	Peak hour TFs	2027 onwards
Waterbeach New Town	S/0559/17/OL & S/2075/18/OL	TEMPro only	2038 onwards
Bourne Airfield	S/3440/18/OL	Peak hour TFs	2038 onwards
2013 OPP Phase 1*	11/1114/OUT	Peak hour TFs	2027 onwards

Notes:
** Partial uplift applied for unbuilt Phase 1 units based on a revised forecasting approach for Proposed Development. Traffic generated by completed units are captured within the 2024 baseline traffic flows.*
TFs = Traffic Flows

7.14 In addition to accounting for TEMPro-derived growth and committed development traffic, the future baseline also considers the potential redistribution of existing traffic flows as a result of the Proposed Development.

7.15 At present, it is understood that approximately 45% of daily traffic using Eddington Avenue (between Madingley Road and Huntingdon Road) comprises through-trips, i.e., vehicles with neither an origin nor destination in Eddington, using the route as a shortcut. The introduction of Cartwright Avenue, which will form a new connection between Huntingdon Road and Turing Way / Eddington Avenue through the western parcel of the Proposed Development, is expected to intercept some of this through-traffic, particularly trips travelling between Huntingdon Road (west of Girton Road) and Madingley Road.

7.16 Automatic Number Plate Recognition (ANPR) surveys undertaken in March 2025 were used to quantify the proportion of these through-trips. In future baseline scenarios inclusive of the proposed Cartwright Avenue, a portion of these movements has been re-routed from the Huntingdon Road / Eddington Avenue junction (southbound right-turn and northbound left-turn) to Cartwright Avenue, which is anticipated to provide a more direct and attractive alternative.

7.17 Of observed trips passing through screen lines along Huntingdon Road and Eddington Avenue, the proportion of trips using Eddington Avenue as a through-route as described have been quantified as follows:

- AM peak hour (08:00): 19% southbound, 4% northbound;
- PM peak hour (17:00): 6% southbound, 12% northbound; and
- 12-hour (07:00-19:00): 13% southbound, 11% northbound.

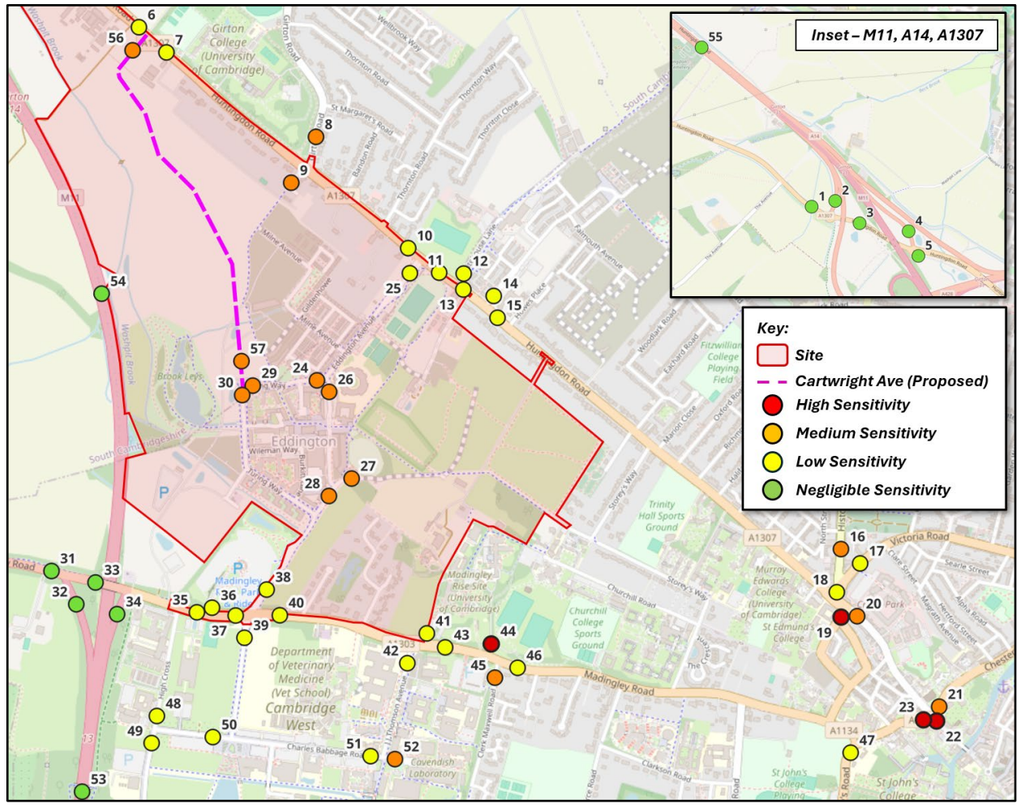
7.18 Scenarios have been developed as part of this ES chapter to review the effects of the Proposed Development against future baselines that 1) include redistribution of baseline traffic via Cartwright Avenue and 2) do not include redistribution. These form core and sensitivity scenarios, respectively, and are outlined in further detail later in this chapter.

7.19 Further details on the actual 2027, 2033, and 2038 future baseline traffic flows are provided later within this ES chapter.

Study Area

7.20 The extent of the study area is consistent with that used to support the Transport Assessment submitted within the OPA, which was agreed in consultation with CCoC. The study area is illustrated in Figure 7.1 through the identification and colour-categorisation of links according to their receptor sensitivity classification – discussed in further detail within the '*Methodology of Defining Effects*' section of this ES chapter.

Figure 7.1 Study Area – Links Categorised by Receptor Sensitivity



Evolution of the Baseline

7.21 The evolved baseline reflects a future scenario in which all identified committed development schemes ('cumulative schemes') within the study area, including full build-out of Phase 1 of the 2013 OPP, are assumed to be complete and operational. It represents the cumulative transport environment in the absence of the Proposed Development.

7.22 This scenario additionally assumes natural evolution of the surrounding area and the delivery of committed transport infrastructure. As an example, this includes the expected delivery of the GCSPS's Madingley Road walking and cycling scheme, which is assumed to proceed within the assessment timeframe. The scheme proposes to include segregated cycleways and new crossings between Eddington Avenue and Queen's Road. This scenario also includes the uplift in frequency of the U1 and U2 bus services which is a S106 obligation associated with the 2013 OPP.

7.23 Forecast traffic flows within the evolved baseline are derived from committed development traffic where site-specific data is available, and supplemented by TEMPro growth where relevant (e.g. strategic routes such as the M11 corridor). The evolved baseline forms the reference case for assessments presented later in this chapter.

Impact Assessment Methodology

7.24 The IEMA Guidelines set out several potential environmental effects relating to traffic and movement considerations which potentially require assessment. Those which relate to the assessment presented in this ES chapter are:

- Severance of communities;
- Non-motorised user (NMU) delay;
- Non-motorised user amenity;
- Fear and intimidation on and by road users;
- Road vehicle driver and passenger delay; and
- Road user and pedestrian safety.

7.25 Hazardous and abnormal large loads have been scoped out of the assessment given the nature of the Proposed Development, as agreed via EIA Scoping.

7.26 The following methodologies and assumptions have been applied to assess the likely transport effects of the Proposed Development and will be applied to the assessment in the ES. These have been applied to highway links that meet the IEMA Guidelines initial screening criteria (i.e. Rules 1 and 2), described in paragraphs 7.68 to 7.70.

Severance of Communities

7.27 Severance is defined in the IEMA Guidelines as the perceived division that can occur within a community when it becomes separated by major transport infrastructure. It describes a series of factors that separate people from places and other people. Such division may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by infrastructure.

7.28 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.

7.29 Different groups in a community may be more affected by severance than others. Accordingly, consideration of severance relates to:

- The nature of transport infrastructure on any assessed link (for example type and speed of road, availability of crossing facilities);
- The characteristics of movements on that link (for example people crossing roads, the speed and volume of traffic); and
- The nature of receptors that may travel to facilities on that link (for example people travelling to schools or places of employment).

7.30 The effect the scheme may have on receptors on any transport link has been assessed with consideration of the current severance caused by traffic and related factors, and the extent to which additional traffic may exacerbate any identified issues.

7.31 The IEMA Guidelines identify that "The Department for Transport has historically set out a range of indicators for determining the significance of severance. Changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance respectively".

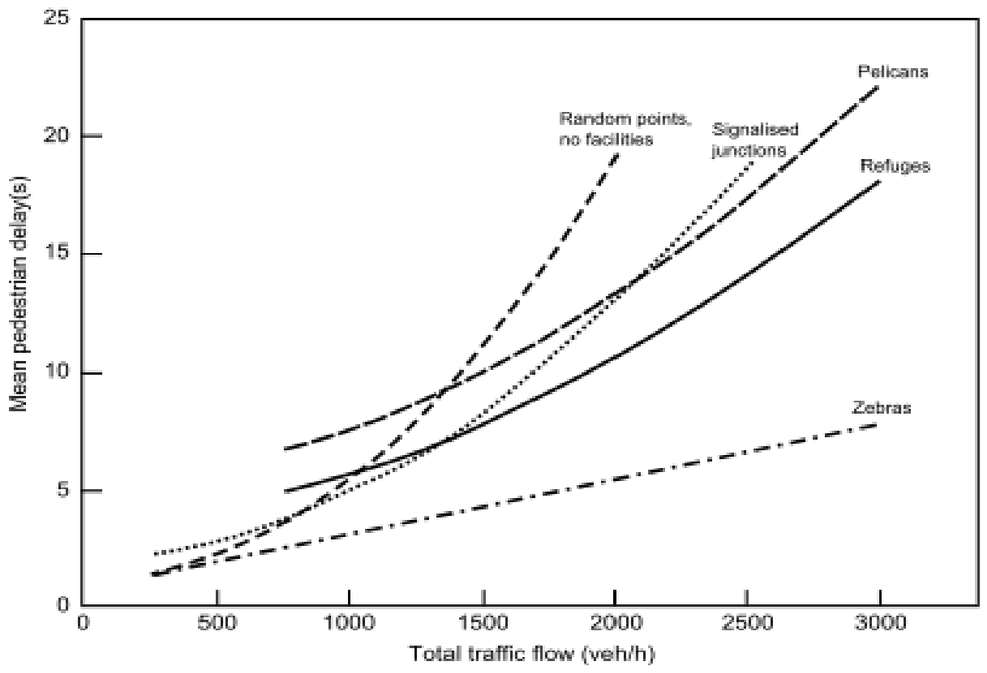
7.32 The thresholds provide a starting point for assessment to consider the potential effects of the Proposed Development with the full consideration of severance made with regard to specific local conditions outlined above.

Non-Motorised User Delay

7.33 The 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 do not set any thresholds, recommending instead that assessors use their judgement to determine the significance of the impact.

7.34 The IEMA Guidelines refer to a report published by the Transport Research Laboratory ('TRL') (SR356),as providing a useful approximation for determining pedestrian delay. The TRL 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. This research provides predictive mean pedestrian delay based on empirical data considering traffic flow and a range of parameters such as crossing width and vehicle speeds. The findings of the research are shown in Figure 7.2.

Figure 7.2 Mean Pedestrian Delays Associated with Different Road Crossing Situations



7.35 A two-way flow of 1,400 vehicles per hour has been adopted as a lower threshold for assessment (equating to a mean 10 second delay for a link with no pedestrian facilities in the TRL report). Below this flow, pedestrian delay is unlikely to be a significant factor and has been classified as a negligible impact. This is deemed a robust starting point for narrowing down the modelled routes within the study area and ensuring the routes selected exceeded the suggested threshold of analysis. It should be noted that for controlled forms of pedestrian crossing, the pedestrian delays are less.

Non-Motorised Amenity

7.36 The IEMA Guidelines define non-motorised amenity as "the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and the infrastructure provision relative to traffic."

7.37 The IEMA Guidelines describe that previous guidance presented tentative thresholds for judging the significance of changes in pedestrian amenity would be where the traffic flow (or Heavy Goods Vehicle (HGV) component) is halved or doubled.

7.38 These thresholds have been used as a starting point for any assessment of a link, alongside consideration of local conditions. The defined thresholds have been used alongside further judgments and the wider consideration of infrastructure.

Fear and Intimidation on and by Road Users

7.39 The IEMA Guidelines identify that fear and intimidation is dependent upon a number of factors including traffic volumes and speeds, vehicle composition and the proximity of road users to traffic as a factor of infrastructure that is in place. It is stated that *"While most of these factors can be quantified, there will be a need for judgement to be exercised in determining the degree of fear and intimidation".*

7.40 The IEMA Guidelines sets out a weighting system to provide an approximation of the likelihood of fear and intimidation. This relates to non-motorised users. The approach allows the degree of hazard to be assessed with reference to the established thresholds, and a score provided for each combination for each highway link within the study area.

7.41 Any necessary assessment of a highway link will consider the changes in total vehicle, HGVs or vehicle speeds, suggesting a degrees of hazard score (as Table 3.1 of the IEMA Guidelines). The total hazard score can then be applied to determine the level of fear and intimidation referenced in Table 3.2 of the IEMA Guidelines (Ref 13.1). This is undertaken for the baseline and with the consideration of Proposed Development traffic. Any changes in the score are considered against the criteria in Table 3.3 of the IEMA Guidelines to consider a magnitude of impact where the 'step changes' in hazard score, reflecting the changes in traffic flows from the baseline conditions can be assessed.

7.42 The approach outlined in the IEMA Guidelines has been used to assess effects relating to fear and intimidation on non-motorised road users.

Road Vehicle Driver and Passenger Delay

7.43 Traffic delays to non-development traffic can occur at several points on transport networks. The IEMA Guidelines identify that delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system. Generally, this relates to junction capacity rather than the capacity of a section of road.

7.44 Proportional and absolute increases in traffic numbers provide an indication of likely effects upon driver delay. Such assessments help inform the extent of required highway capacity assessments which will normally form part of the technical work reported within the Transport Assessment, and which generally focuses on conditions in the network peak periods.

7.45 The assessment of vehicle driver and passenger delay has been undertaken through consideration of proportional and absolute impacts and judgments of highway network performance as detailed in the Transport Assessment. Levels of delay at key junctions alongside vehicle flows and NMU flows crossing key links has been taken into account. This is the same methodology used to calculate impact on public transport users.

Road User and Pedestrian Safety

7.46 Collision clusters within the study area have been identified by undertaking a detailed review of the baseline characteristics to determine the road safety sensitivity of the highway network. The assessment is based on an analysis of personal injury collision data occurring within the most recent five years.

7.47 Patterns or road safety factors that could be exacerbated by traffic or movement have been identified and considered in the context of construction movements strategies, their managements and the temporary nature of effects.

7.48 Given the temporary nature of effects that are expected from the scheme, the approach is considered appropriate.

7.49 As outlined in the IEMA Guidelines, the relevant authorities have been engaged to consider the best approach for determining the significance of road safety effects. This has been undertaken by using the results of Road Safety Audits where changes are proposed to the road network and reviewing the most recent 5 year period of Personal Injury Accident data for the agreed study area.

Large Loads (Including Abnormal Loads)

7.50 Whilst the scheme is not expected to result in the movement of hazardous nor abnormal loads, and have therefore been scoped out of this assessment, the movement of specific equipment and materials will fall within the categorisation of large loads.

7.51 The movement of large loads is regulated by National Highways and will be subject to separate agreement with the relevant highway authorities and police through the Electronic Service Delivery for Abnormal Loads (ESDAL) system.

7.52 A specific assessment of abnormal loads, and measures to mitigate and manage these abnormal vehicles, has been undertaken as part of the CTMP. Appropriate routes for abnormal load movements and mitigation strategies to secure safe passage have been identified in the CTMP. This ES chapter considers if other transport impacts arising from abnormal loads could result.

Enabling, Demolition and Construction

7.53 Construction traffic estimates were provided by the Construction Advisor, Turner & Townsend (T&T), including monthly and daily peak forecasts for HGV and Light Goods Vehicles (LGV) movements. The assessment uses peak daily figures, doubled to account for both inbound and outbound movements. These are assumed to be equivalent to both AADT and AAWT, based on the T&T assertion that construction traffic will operate Monday to Friday (07:00–19:00) and Saturday (07:00–13:00), with no activity on Sundays or public holidays.

7.54 Construction traffic was manually assigned to the local and strategic highway network using site access points and routing assumptions provided by T&T. Trips will be directed to use the strategic network (e.g. M11, A14) as far as practicable, with turning movements and routing restrictions incorporated, including U-turns at key junctions where required. Construction access assumptions and routing constraints are consistent with those outlined in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction Works**.

7.55 For the Interim (2033) assessment year, the corresponding construction trip forecasts from T&T have been used to model construction impacts on the network. The highest impact year is 2033, with a peak of 91 one-way trips per day (equivalent to 182 two-way movements), of which 72% are HGVs. As each of these forecasts represents the peak trip generation on a year-by-year basis, they inform a worst-case assessment of severance, pedestrian amenity, fear and intimidation, and driver delay.

Phasing

7.56 Phasing has been incorporated into the assessment through the 2033 Interim assessment year, which also reflects partial occupation of the Proposed Development alongside ongoing phased and peak construction activity. Committed developments have only been included in the relevant future baseline year where they are expected to be operational, consistent with the methodology set out earlier in this ES chapter.

7.57 New receptors, including Phase 1 (of the 2013 OPP) dwellings already being constructed and occupied, early dwellings and employment within the Proposed Development, and all future receptors associated community areas, are accounted for along Cartwright Avenue.

Completed Development

7.58 Operational effects of the Proposed Development have been assessed using forecast traffic flows based on the maximum development quantum, even though the final delivered floorspace is expected to be lower. This ensures a robust assessment based on a reasonable worst-case scenario. Trip generation and mode share assumptions are consistent with those set out in the supporting Transport Assessment, which draws on observed data from Phase 1 of the 2013 OPP and nearby sites such as West Cambridge. Further details of the development proposals are provided in **ES Volume 1, Chapter 4: Proposed Development**.

7.59 Assessment scenarios include a 2033 Interim and a 2038 Completed Development scenario. These capture the phased delivery and occupation of the Proposed Development alongside committed development and background growth. The 2038 scenario represents the reasonable worst case for the purposes of assessment, reflecting the full quantum of development and associated transport demand. A summary of the external vehicle trip generation associated with the Proposed Development is presented in Table 7.2.

Table 7.2 Proposed Development – External Vehicle Trips

Time Period	Arrival	Departures	Two-Way
AM Peak Hour	469	172	640
PM Peak Hour	179	560	739
12-Hour (07:00-19:00)	2,357	2,433	4,789
AADT	2,444	2,534	4,978
AAWT	2,437	2,525	4,962

Assumptions and Limitations

7.60 Below is a list of assumptions or limitations relating to the transport and movement assessment methodology described above:

- Construction traffic forecasts have been derived from T&T estimates and applied to the network using known access locations and agreed routing assumptions;
- Construction traffic has been assumed to operate Monday–Friday (07:00–19:00) and Saturday (07:00–13:00) only, with no activity on Sundays or public holidays;
- Future baseline conditions incorporate committed developments based on the latest available information and professional judgement on delivery timelines. Sites are only included in years where occupation is reasonably expected and where traffic flows were provided by each relevant planning application for links and junctions in the agreed Proposed Development geographical scope area;
- Strategic growth has been applied using TEMPro forecasts for the M11 corridor only, to avoid double-counting where committed development traffic has been explicitly included on the local network; and
- Trip generation for the Proposed Development is based on the maximum development quantum, with trip rates and mode share assumptions informed by existing Phase 1 data, West Cambridge data, and TRICS.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

7.61 Receptors of potential effects associated with the Proposed Development can be people, wildlife, or elements of the natural and built environment. In the context of this ES chapter, receptors are considered to be users of the transport networks to whom the transport effects of the Proposed Development from its construction and operation would be perceptible. These include:

- Non-motorised users using the highway and public rights of way networks (pedestrians, cyclists, and equestrians); and
- Drivers and passengers of motorised vehicles (including public transport and emergency services) using the highway network.

7.62 All receptors will exhibit a greater or lesser degree of sensitivity to the changes brought about by the Proposed Development. The sensitivity of a receptor is a function of its capacity to accommodate change. For example, transport users (receptors) that have a higher sensitivity to changes in traffic are those visiting places such as schools, hospitals and playgrounds.

7.63 Further, the sensitivity of a receptor can also be a function of the infrastructure on a highway link. For example, where there is a high concentration of pedestrians, and limited facilities such as crossings and footways, the transport users would have a higher sensitivity to changes in traffic.

7.64 Therefore, highway links which have these characteristics are assumed to have a higher concentration of these users and therefore are classified with a higher sensitivity.

7.65 The sensitivity of highway links with regard to infrastructure and the receptors on those links are set out in Table 7.3 which has been prepared with reference to the high-level detail set out in paragraph 1.30 of the IEMA Guidelines.

Table 7.3 Sensitivity of Receptors Criteria

Receptor Sensitivity	Receptor Type
High	High sensitivity receptors (e.g. hospitals, schools, nurseries, nursing homes, a high concentration of residential dwellings and facilities and amenities, areas with high tourist footfall, significant pedestrian/cycle desire lines etc.) OR No / limited separation provided by the highway environment (e.g. no footway provision / cycle provision) in an area where there are significant pedestrian / cycle desire lines.
Medium	Medium sensitivity receptors (e.g. medium concentration of residential dwellings and facilities and amenities, designated pedestrian/cycle desire lines including cycle routes and public footpaths). OR No / limited separation from traffic provided by the highway environment (e.g. narrow, intermittent footway provision close to carriageway, substandard pedestrian, and cycle provision) in an area where there are some pedestrian / cycle desire lines.
Low	Low sensitivity receptors (e.g. small concentration of residential dwellings, facilities and amenities, few pedestrian / cycle desire lines etc) OR A highway environment that can accommodate changes in volume of traffic (e.g. adequate (i.e. to standard) footway provision / cycle provision, well separated provision from carriageway) with few pedestrian / cycle desire lines.
Negligible	No sensitivity receptors (e.g. no residential dwellings, facilities and amenities and no pedestrian / desire lines etc) such as a rural area. OR A highway environment that can accommodate changes in volume of traffic (e.g. adequate (i.e. to standard) footway provision / cycle provision, well separated provision from carriageway) with no sensitive receptors (negligible).

7.66 The sensitivity of receptors to a change in road safety has been assessed by reference to the road traffic collision data. A baseline road safety assessment has been undertaken within and is summarised later in this ES chapter (and Section 4.9 of the TA) to establish clusters and any trends in collisions, including those involving vulnerable users. The road safety assessment summarised a total of 30 recorded Personal Injury

Collision (PIC) within the study area over the last full five-year period and concluded there had been no fatal PICs recorded and that there were no clear clusters with inherent causation factors.

7.67 It may therefore be concluded that there are no significant road safety issues in this area, which otherwise would have been reflected in changes to link sensitivity.

Screening – Application of Rules 1 and 2

7.68 Within the IEMA Guidelines, two broad rules are suggested that can be used as a screening process for 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%); and
- Rule 2: include any other specifically sensitive areas (where sensitivity is defined as 'high' based on the criteria in Table 7.3) where traffic flows have increased by 10% or more.

7.69 The IEMA Guidelines is based on knowledge and experience of the environmental effects of traffic. The threshold of 30% has been set based on experience that imperceptible changes in the environmental effects of traffic are generally experienced when there is less than a 30% increase in traffic. Additionally, projected changes in total traffic flow of less than 10% create no discernible environmental effect, hence the second threshold as set out in Rule 2.

7.70 In accordance with the IEMA Guidelines, road links within the study area that do not meet the IEMA screening rules have been concluded to have a non-significant effect on transport and have been scoped out of further assessment.

Magnitude of Impact

7.71 For those links that are not screened out of the assessment using Rules 1 and 2, the criteria set out in Table 7.4 has been used to determine the magnitude of impacts. However, the absolute level of an impact is also important (e.g. the total flow of traffic or HGVs on a link) and comment is made on this in the analysis where relevant. In addition, it is important to note that some impacts assessed are not permanent but are temporary (such as those associated with construction) and have been assessed using professional judgement, recognising that this affects the impact magnitude criteria attached to them.

Table 7.4 Magnitude of Impact Criteria

Impact	Magnitude of Impact			
	High	Medium	Low	Negligible
Severance	Change in total traffic of >90%	Change in total traffic of >=60 and <90%.	Change in total traffic of >=30 and <60%.	Change in total traffic of > 0 and <30%
Non-Motorised User Delay	NMU delay increases by >10 seconds (calculated by applying TRL 'pedestrian delay and traffic management' SR356)	NMU delay increases by >=5 and <= 10 seconds (calculated by applying TRL 'pedestrian delay and traffic management' SR356)	NMU delay increases by >2 and < 5 seconds (calculated by applying TRL 'pedestrian delay and traffic management' SR356)	Change in two-way traffic of > 0 and <1,400 vehicles per hour OR NMU delay increases by >0 and <= 2 seconds (calculated by applying TRL 'pedestrian delay and traffic management' SR356)
Non-Motorised User Amenity	Change in two-way traffic of >160% OR Change in HGV flows of >160%	Change in two-way traffic of >130% and <=160% OR Change in HGV flows of >130% and <=160%	Change in two-way traffic of >100% and <=130% OR Change in HGV flows of >100% and <=130%	Change in two-way traffic of >0 and <=100% OR Change in HGV flows of >0 and <=100%
Fear And Intimidation on and by Road Users	Per IEMA Guidelines: Two step changes in level (see paragraphs 7.39 to 7.42 regarding methodology)	One step change in level, but with: a) >400 vehicle increase in average 18hr two-way all vehicle flow; and/or b) >500 increase in total 18hr heavy vehicle flow	One step change in level, with a) <400 vehicle increase in average 18hr two-way all vehicle flow; and/or b) <500 increase in total 18hr heavy vehicle flow	No change in step changes
Driver Delay	A judgement based on analysis detailed in the Transport Assessment on increase in journey times.			
Road User and Pedestrian Safety	Magnitude of impact to be based on professional judgement following analysis detailed in the Transport Assessment on collision history and the nature of movements associated with the scheme.			

Defining the Effect

7.72 The assessment of the scale and significance of effects considers the sensitivity of the affected receptor and the magnitude of impact. This section explains how the nature, scale, geographic extent, and duration of effects have been defined, as well as whether they are considered direct or indirect. The following section then sets out how likely significant effects are categorised.

7.73 The nature of an effect describes whether the effect is considered adverse, beneficial, or neutral:

- Adverse: an effect that detrimentally affects a receptor or worsens baseline transport conditions (e.g. increased traffic on a sensitive route, reduced pedestrian comfort, or increased journey times);
- Beneficial: an effect that improves conditions for users (e.g. reduced traffic flows, improved safety, or enhanced access); and
- Neutral: an effect that does not materially change baseline conditions, or where changes are negligible in scale or outcome.

7.74 The scale of an effect is determined by combining receptor sensitivity and magnitude of impact, as set out in the matrix in Table 7.5.

Table 7.5 Classification and Significance of Effects

Sensitivity of Receptor	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Major	Major/ Moderate	Moderate	Minor
Medium	Major / Moderate	Moderate	Minor	Minor
Low	Moderate	Minor	Minor	Negligible
Negligible	Minor	Minor	Negligible	Negligible

7.75 The geographic extent of an effect refers to the spatial scale at which it is experienced. **Site-level** effects are limited to the development site and its immediate surroundings. **Local** effects extend to neighbouring communities or road networks within the vicinity. Beyond that, effects can also be categorised as **district**, **regional**, or **national** in scale.

7.76 The duration of an effect is determined by how long it persists. **Temporary** effects are those occurring during the enabling, demolition and construction phases of the Proposed Development and can be further categorised as short-term or medium-term, depending on their specific timeframe. For clarity, short-term effects are up to 12 months, medium-term effects are 1-5 years, and long-term effects are more than 5 years. Effects that result from the completed and operational Proposed Development are classed as '**permanent**' or '**long-term**' effects.

7.77 Finally, effects can either be described as **direct** or **indirect**. Direct effects are those that result immediately from the Proposed Development, without any intervening steps and can include changes in traffic flow, vehicle delay, or junction performance arising from development-related trips. Indirect effects occur as a result of subsequent behavioural or network responses to these direct changes. For example, changes in traffic flow may lead to altered travel behaviour such as shifts in route choice, mode of transport, or travel time. These responses occur as a consequence of the initial impact, rather than being caused by the development directly.

Categorising Likely Significant Effects

7.78 As a general rule, effects assessed as moderate or major (whether adverse or beneficial) are considered **significant** in EIA terms, whereas minor or negligible effects are considered **not significant**. This approach applies consistently across both construction and operational phases.

7.79 In accordance with the IEMA Guidelines, professional judgement is also applied where appropriate as well as consideration of absolute levels of traffic and the percentage change in traffic. Paragraph 1.13 of the guidance states that *"the guidelines are intended to complement professional judgement and the experience of trained and competent assessors"* and goes on to state that *"the experience and expertise of the assessor will remain of primary importance, along with adequate consultation."* The IEMA Guidelines also state in paragraph 2.19 that assessing whether increases in traffic are significant in absolute terms requires further consideration.

BASELINE CONDITIONS

7.80 This section provides a description of the baseline conditions used to inform the main assessment outlined below. Further detail on baseline conditions are provided within the TA submitted with the planning application.

Site Description

7.81 The site is located approximately 2km north-west of Cambridge City Centre. The site is roughly triangular in shape and comprises land between Huntingdon Road (A1307), Madingley Road (A1303) and the M11. The site forms part of the emerging settlement of Eddington.

7.82 The site predominantly comprises grassland fields, construction areas, and sections of Huntingdon Road (A1307) and Madingley Road (A1303). Barcroft Centre and associated buildings are located within the most northerly extent of the site, along Huntingdon Road. The site contains areas of hard standing, including an area utilised for parking to the south. There are a variety of amenity and green spaces on the site including swales, ponds, grassland, areas of woodland, hedgerows and individual trees. A storm water recycling system pond, which has never been commissioned, is located along the western edge of the site.

7.83 Vehicular access to the site can be gained via either Huntingdon Road to the north-east or Madingley Road to the south of the site. Huntingdon Road and Madingley Road are linked via Eddington Avenue, which traverses the south-eastern extent of the site. Pedestrian access can be gained via the same routes. A Public Rights of Way (Footpath 99/5) crosses the site in the north-west corner, running between Huntingdon Road to Cambridge Road, and crossing beneath the M11.

7.84 Traveller's Rest Pit Site of Special Scientific Interest (SSSI) is located within the eastern extent of the site. The Washpit Brook is the closest watercourse to the site which runs through the site from south-east to the north-west. Much of the site comprises topsoil and clay that emerged as a result of development undertaken pursuant to the 2013 OPP.

7.85 The site is bound by:

- A small portion of the A14 to the north, and Girton College, residential properties and agricultural fields which front onto Huntingdon Road (A1307) to the north and north-east;
- Residential properties located along Huntingdon Road, Ascension Parish Burial Ground, Trinity Hall (University of Cambridge student accommodation) and Trinity Hall sports grounds to the east of the site;
- Madingley Road Park and Ride, Madingley Road (A1303), and residential properties and buildings associated with the University of Cambridge to the south; and
- The M11 motorway to the west, beyond which lies agricultural fields.

Active Travel Infrastructure – Walking

7.86 A comprehensive pedestrian network is already in place within Eddington, facilitating internal movement between residential areas, the local centre, and the Madingley Road Park and Ride facility.

7.87 The Ridgeway, a shared-use active travel route, provides an east–west connection through the site, linking Huntingdon Road in the west to Storey's Way in the east. Storey's Way provides further connections to Madingley Road to the south and Huntingdon Road to the north, enabling access to the wider Cambridge pedestrian network.

7.88 Pedestrian footways and shared-use paths are located along Eddington Avenue, supporting north–south movement through the site. These routes connect with existing infrastructure along both Madingley Road and Huntingdon Road, ensuring integration with the broader active travel network.

7.89 Footways along Madingley Road provide eastbound pedestrian access towards Cambridge City Centre via a number of potential routes. Westbound connectivity is provided towards the village of Madingley. Additionally, Madingley Road enables pedestrian crossings between Eddington and the West Cambridge Innovation District, enhancing north–south permeability across the corridor.

7.90 Footways along Huntingdon Road facilitate eastbound pedestrian connectivity towards Cambridge City Centre, as well as northbound access to areas north of the city via routes such as Arbury Road and Whitehouse Lane. The corridor also supports north–south pedestrian movement between Eddington and Girton, with crossing facilities enhancing permeability across Huntingdon Road.

7.91 There are also a range of Public Rights of Way (PRoW) in the vicinity of the site. 'Footpath 99/5' routes south-east to north-west at the northern end of the site, providing a connection between Girton and Hardwick. 'Footpath 99/4' routes from Huntingdon Road to Duck End in Girton, where it crosses over the A14 via a footbridge. 'Footpath 39/48' routes along Whitehouse Lane south-west to north-east for approximately 0.6km, before changing to 'Footpath 135/5' and continues until it reaches Histon Road (B1049). In addition to the footpaths, 'Bridleway 39/30' is located to the south of Madingley Road between the M11 southbound on-slip and the West Cambridge site and runs at a north-south bearing.

7.92 Figure 7.3 shows the local walking routes and infrastructure within the vicinity of the site, and illustrates how Eddington integrates with the existing local pedestrian network.

7.93 Figure 7.3 illustrates that there is an existing comprehensive lattice-oriented network of pedestrian footways within Eddington that connect into the wider local and Cambridge pedestrian network. Both north-south and east-west connectivity for pedestrians from Eddington is provided, with connections to Huntingdon Road, Madingley Road, and Storey's Way, respectively.

Figure 7.3 Existing Walking Routes and Infrastructure

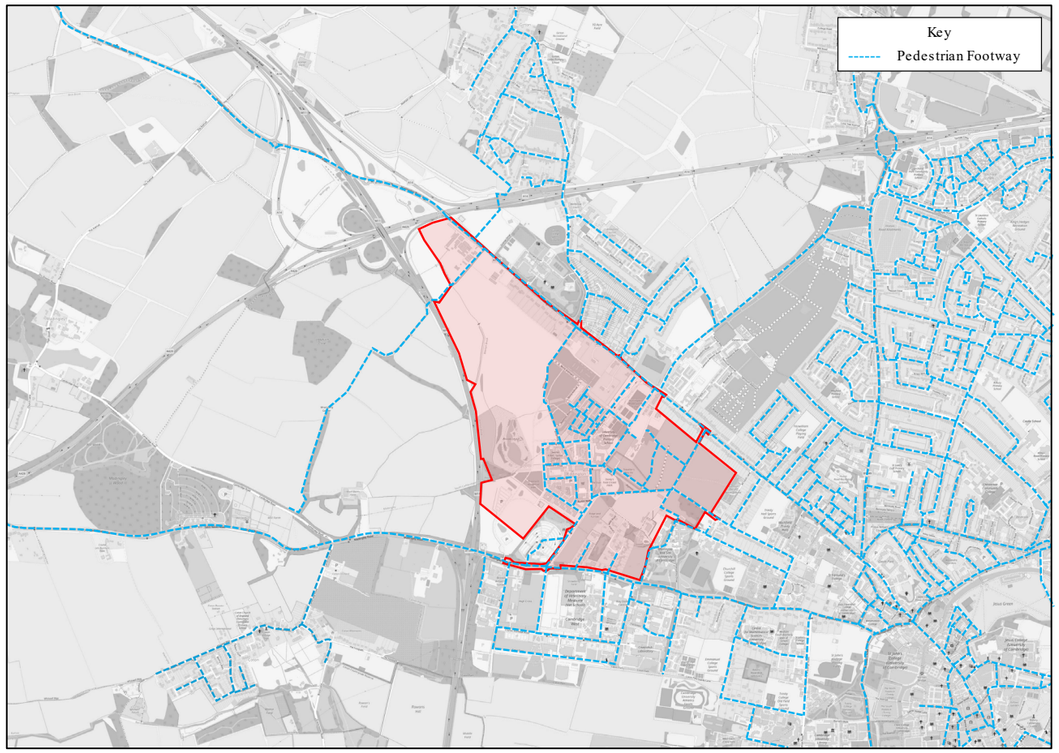
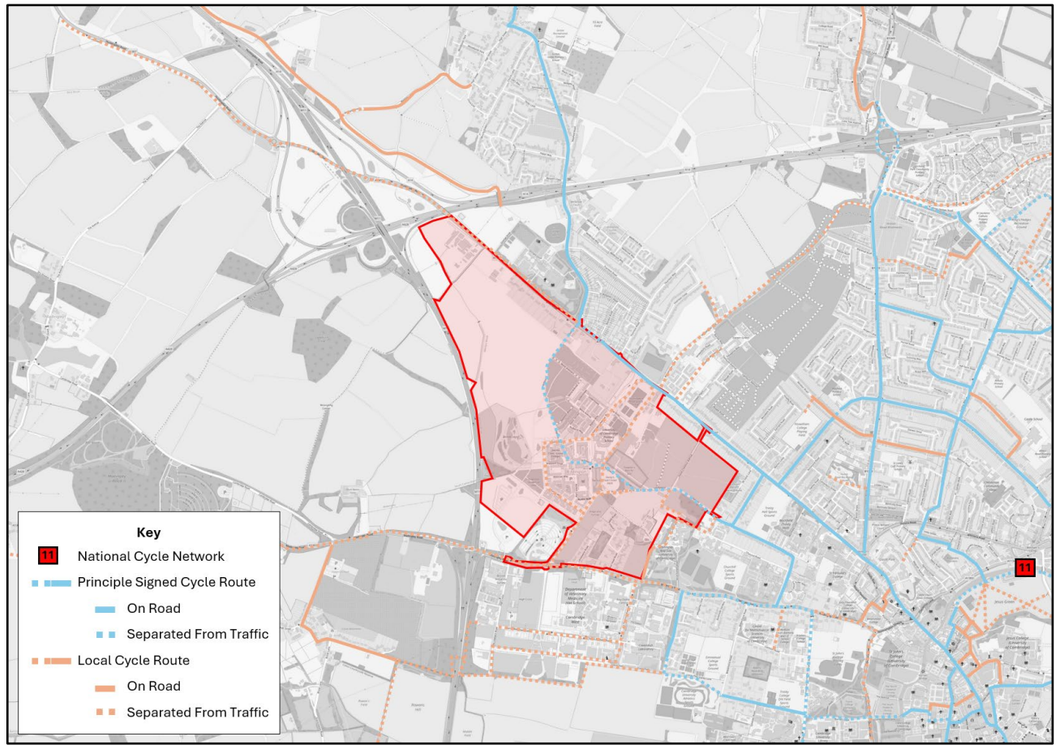


Figure 7.4 Existing Cycle Routes and Infrastructure



Active Travel Infrastructure – Cycling

7.94 A summary of the existing cycle routes and infrastructure nearby the site is shown in Figure 7.4, compiled from the CCoC website.

7.95 As shown in Figure 7.4, there is a range of cycling routes and infrastructure within the vicinity of the site that provide connections to key areas. The infrastructure varies between a mixture of on-road and off-road (separated from traffic).

7.96 There are existing cycle routes that run through Eddington, along Eddington Avenue and Turing Way. The Ridgeway Cycle route also traverses through the site from Huntingdon Road and connects into Storey's Way to the east.

7.97 Local cycle routes run eastbound along both Huntingdon Road and Madingley Road and connect into the city-centre cycle network. North-south cycle routes that cross Madingley Road and Huntingdon Road in a number of locations also provide connections to West Cambridge and to the northern fringe of Cambridge.

7.98 There is existing cycle infrastructure on the northern side of Huntingdon Road to the west of the site that provides connections to Bar Hill. On Madingley Road, a cycle track on the northern side of the carriageway provides a connection to Madingley.

Existing Bus Network

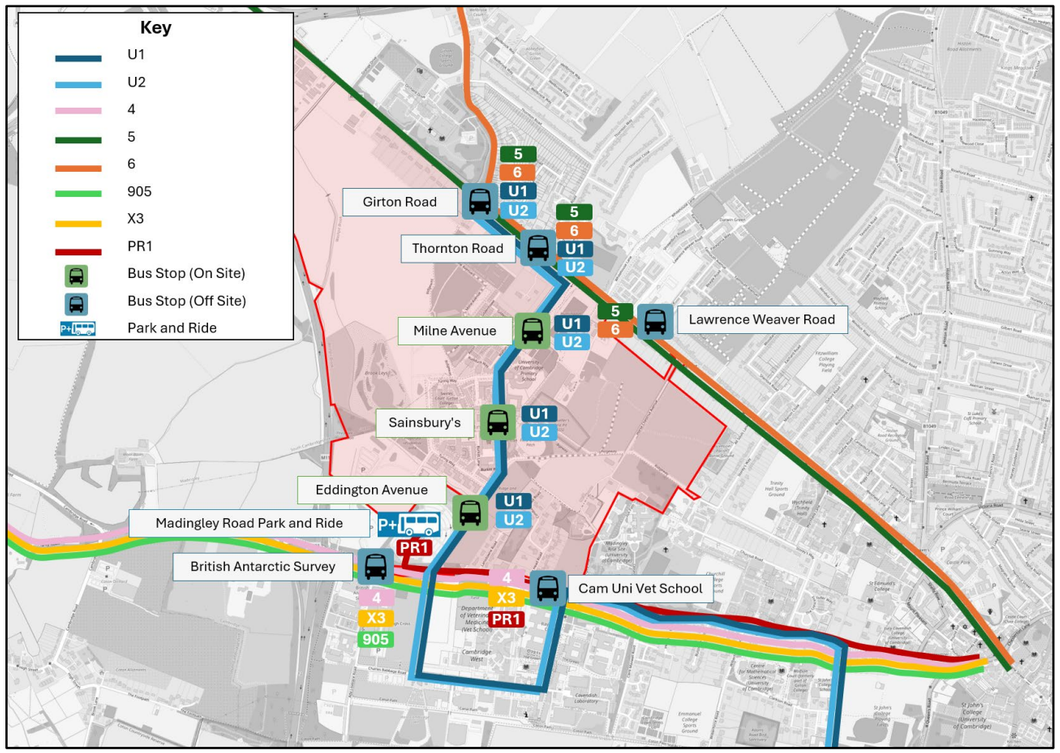
7.99 The existing Eddington development and the area surrounding the site is well-served by a number of bus services and routes, providing connectivity to a range of destinations.

7.100 A summary of all bus services that serve existing on-site and nearby off-site bus stops and interchanges is shown in Figure 7.5.

7.101 Figure 7.5 shows there are three existing on-site bus stops at Eddington. Two bus stops within the vicinity of the site are located along Madingley Road, and three on Huntingdon Road as well as a bus stop on Wellbrook Way.

7.102 In addition to bus stops, Madingley Road Park and Ride facility is located immediately south of the site. The Park and Ride aims to intercept traffic from the west and then provides frequent bus services to (and returning) Cambridge City Centre (St Andrews Street Bus Stop). At present, there is approximately 378 car parking spaces at Madingley Road Park and Ride.

Figure 7.5 Routes Servicing On-Site and Off-Site Bus Stops and Interchanges



Existing Rail Network

7.103 The nearest railway station to the site is Cambridge Railway Station, which is approximately 4.0km east (as the crow flies), and located to the east of Cambridge City Centre. Cambridge Railway Station is located at the northern terminus of the West Anglian Mainline.

7.104 The railway station is currently managed by Greater Anglia and has a number of facilities available, including a ticket office, self-service ticket machines, refreshment facilities, retail facilities, seating, public toilets and waiting rooms.

7.105 The station has an approximate 330 space car park (including 23 accessible spaces). Cycle parking is also provided adjacent to the station, with 2850 covered and CCTV-monitored spaces provided in a dedicated multi-level cycle park.

7.106 Cambridge Railway Station is served by train services operated by Greater Anglia, Great Northern, Thameslink and Cross County.

Internal Highways Network

7.107 There is an existing road network on the site, that was built as part of Phase 1 of the 2013 OPP.

7.108 Eddington Avenue runs at a north-west bearing through the spine of the site that connects to Huntingdon Road (A1307) and Madingley Road (A1303) to the north and south, respectively. Eddington Avenue is single land carriageway and subject to a posted speed limit of 20mph. Eddington Avenue has rising bollards that are active from 07:00-19:00 every day, to prevent the movement of through traffic along this route.

7.109 In the centre of the site, Eddington Avenue connects with Turing Way. Turing Way routes westbound from Eddington Avenue before routing southbound to provide a connection to a number of residential plots and roads, such as Pheasant Drive and Wileman Way. Turing Way continues southbound before routing eastbound and re-connecting onto Eddington Avenue. Unlike Eddington Avenue, Turing Way is open to all traffic across the day.

Local Highway Network

7.110 The internal highway network links to the local highway network, as the site is located between two main routes leading from the M11 to the centre of Cambridge –Madingley Road (A1303) and Huntingdon Road (A1307).

7.111 Eddington Avenue forms a signalised four arm junction with Madingley Road, located to the south of the development. Madingley Road is a single lane carriageway that runs at an east west bearing. In the vicinity of the site, Madingley Road has a posted speed limit of 40mph which reduces to 30mph towards the centre of Cambridge to the east, near the junction with JJ Thomson Avenue. To the east, Madingley Road connects to the Queens Road (A1134) and Northampton Street, and provides connections into the centre of Cambridge. To the west, Madingley Road provides a connection to the M11 and also to Madingley (via Cambridge Road) and to the A428.

7.112 To the north of the site, Eddington Avenue forms a signalised three armed junction with Huntingdon Road. Huntingdon Road is a single lane carriageway with a posted speed limit of 40mph in the immediate vicinity of the site, that reduces to 30mph to the east nearer to the centre of Cambridge. To the east, Huntingdon Road provides a connection to the Victoria Road (A1143) and Castle Street, which connect to the centre of Cambridge. To the west, Huntingdon Road provides a connection to the M11 and also continuous westbound towards Huntingdon via Longstanton.

7.113 Madingley Rise is located to the south-east of the site, off Madingley Road, is the current access road to the University of Cambridge's (UoC) Madingley Rise site and Institute of Astronomy.

7.114 Storey's Way, located to the east of the site, forms a link between Huntingdon Road and Madingley Road. Storey's Way is a predominantly residential road with traffic calming measures.

7.115 Baseline traffic flows were recorded for the network peak hours alongside a 24 hour period in October 2024. The full summary of baseline flows and future year flows are appended as **ES Volume 3, Appendix: Traffic and Movement – Annex 1**.

Strategic Highway Network

7.116 The local highway network also provides direct access between the site and the A14 and M11 strategic road network (SRN). Madingley Road intersects with the M11 at Junction 13 (J13), whilst Huntingdon Road intersects with the M11 at Junction 14 (J14).

7.117 To the north of the site lies the A14 on an east / west axis from Cambridge. To the east, the A14 provides a connection to Newmarket, Bury St Edmunds, and Ipswich, terminating Felixstowe. To the west. the A14 passes through Huntingdon, crossing the A1 before continuing around Kettering and terminating at Junction 19 (J19) of the M1, the start of the M6.

7.118 The M11 is located to the west of the site, and routes in a north/south bearing. The M11 links between the north circular road in London, passes Bishop's Stortford, Harlow and Stansted Airport before passing to the immediate west of the site with the merger with the A14 at J14.

7.119 The M11 J14 also provides a connection to the A428, which is a strategic road that links Cambridge to settlements such as Bedford, Northampton and Cambridge.

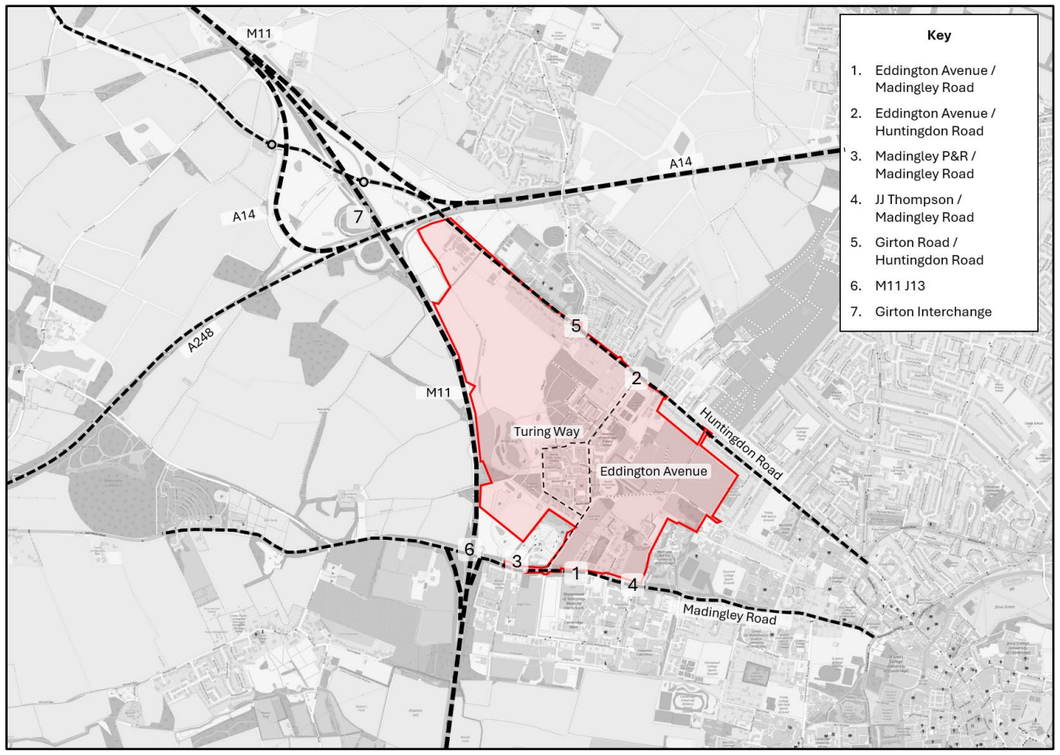
7.120 Only limited movement access is possible at the two closest junctions to the M11 and the A14, which is summarised as follows:

- The A14 is accessed via Huntingdon Road at A14 Junction 31 (J31), however westbound movements only are provided for. Eastbound access to the A14 and southbound access to the M11 are not possible. The nearest A14 eastbound access from the site is via Histon Road, the A14 Junction 32; and
- The M11 is accessed via Madingley Road, but only southbound movements are accommodated towards London.

Summary of Highway Network

7.121 A summary of the highway network and key junctions as detailed within this section of the report is displayed in Figure 7.6.

Figure 7.6 Summary of Highway Network

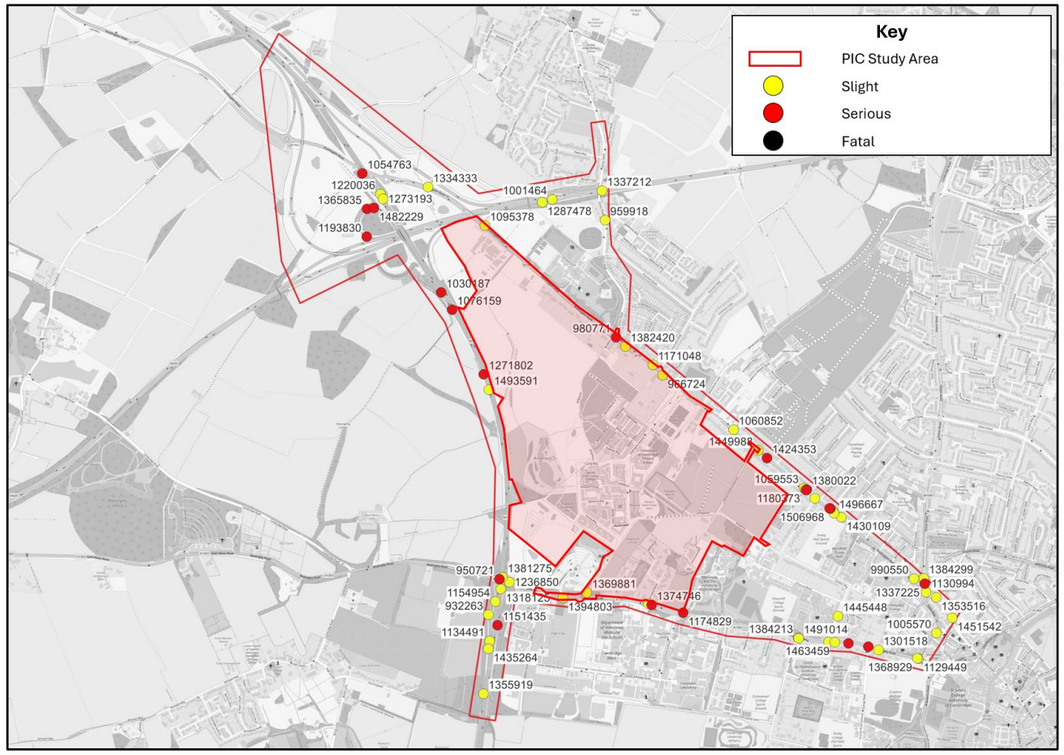


Road Safety

7.122 PIC records for the highway network in the vicinity of the site have been obtained from CCoC. As agreed with CCoC Highways as part of the pre-application scoping process, the records cover the most readily available full five-year period (2020-2024) for the area outlined in Figure 7.7, which has been agreed with CCoC Highways for assessment and used to inform the assessment later in this ES chapter.

7.123 A summary of all PICs that occurred within the study area, classified by 'severity' between 2019-2024 is presented in Figure 7.6 below. The full PIC data report obtained from CCoC Open Data Insight which includes more detailed information and reports is contained within the TA.

Figure 7.7 PIC Data (2020-2024) – All Vehicles



7.124 The PIC data has been reviewed to identify any PIC cluster locations (where multiple PIC's have recorded to have occurred within 25m of each other) and identify common causation factors within clusters that could highlight any existing safety issue.

7.125 Table 7.6 provides a breakdown of all PICs within the study area (Figure 7.7).

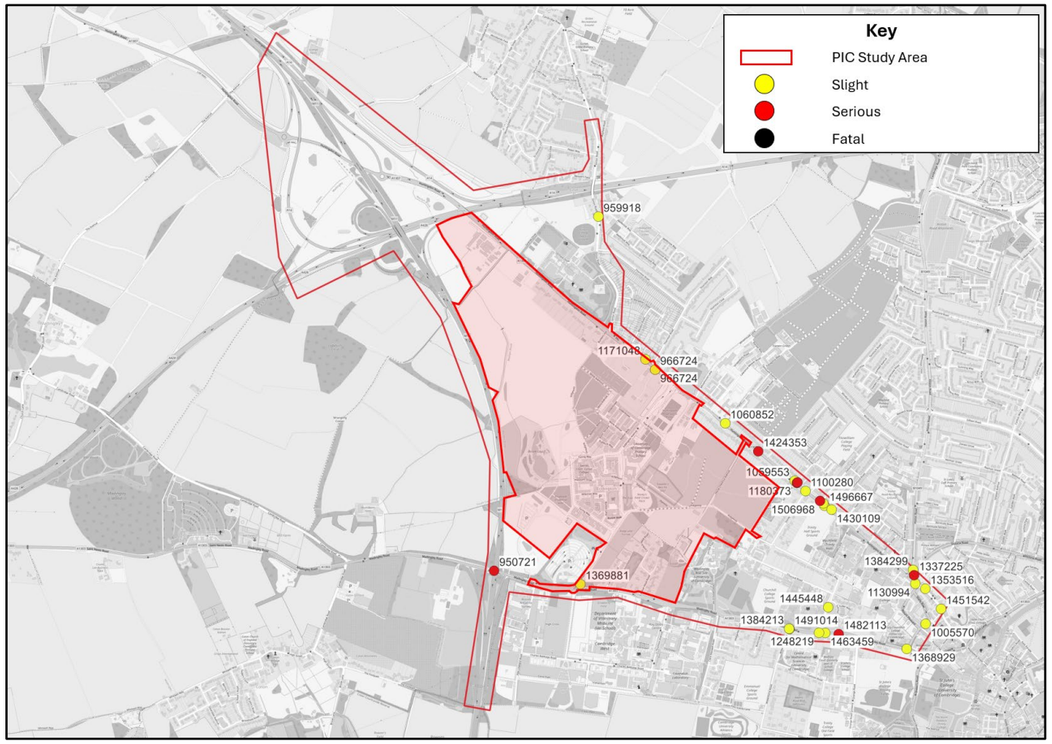
Table 7.6 PIC Data (2020-2024) – By Year

Year	Slight	Serious	Fatal	Total
2020	6	2	0	8
2021	7	4	0	11
2022	8	3	0	11
2023	14	6	0	20
2024	10	5	0	15
Total	45	20	0	65

7.126 This shows there have been 65 PIC's recorded within the study area the last full five-year period (2020-2024). Of these, 45 (69%) were marked as slight, 20 (31%) as serious and 0 (0%) as fatal.

7.127 Figure 7.8 shows the recorded PICs within the study area that that involved a non-motorised user casualty (a pedestrian or cyclist).

Figure 7.8 PIC Data (2020-2024) – Pedestrian / Cyclist Casualty



7.128 Table 7.7 provides a breakdown of the PICs that involved a pedestrian and/or cyclist casualty, as shown within Figure 7.8.

Table 7.7 Pedestrian or Cyclist Casualty PIC Data (2020-2024) – By Year

Year	Slight	Serious	Fatal	Total
2020	4	1	0	5
2021	4	0	0	4
2022	4	0	0	4
2023	5	2	0	7
2024	4	6	0	10
Total	21	9	0	30

7.129 This shows there have been 30 PICs recorded within the study area the last full five-year period (2020-2024) that involved a pedestrian or cyclist casualty. Of these, 21 (70%) were marked as slight, 9 (30%) as serious and 0 (0%) as fatal.

7.130 For locations within the study area where more than five PIC's (e.g., a potential cluster) have been recorded over the last five-year period (2020-2024), a further assessment has been provided.

Road Safety Summary

7.131 The road safety assessment presented within this ES chapter illustrates that there has been a total of 30 recorded PICs within the study area over the last full five-year period. No fatal PICs were recorded. An assessment of any potential clusters has shown that there is no clear clusters with inherent causation factors. It may therefore be concluded that there are no significant road safety issues in this area.

RECEPTORS AND RECEPTOR SENSITIVITY

Existing

7.132 As discussed above, the IEMA Guidelines defines 'sensitive receptors' or 'affected parties' as users of the transport network that may be sensitive to changes in traffic conditions. The following user groups are considered:

- Non-motorised users (i.e. pedestrians and cyclists);
- Public right of way users;
- Motorists and freight vehicles;
- Public transport users; and
- Emergency services.

7.133 The receptors noted above are already within the study area at present, although the completed Proposed Development will likely increase the numbers of each receptor. As defined in the methodology section of this ES chapter, with consideration of highway impact and effects, the sensitivity of links within the study area is a critical factor of assessment.

7.134 Where link sensitivities are considered to be 'Medium' or 'High', these are presented in Table 7.8 alongside justification whilst a complete list of links is provided in **ES Volume 3, Appendix: Traffic and Movement – Annex 2** and presented in Figure 7.1. These link sensitivities take into consideration both the inherent sensitivity of the receptor groups above, as well as the anticipated usage volumes of those receptors on each link. Where links are anticipated to have low volumes of highly sensitive receptors, the link sensitivity will not directly correlate to the high sensitivity of the receptor group.

7.135 As such, professional judgement has been applied to define the link sensitivities by accounting for both the inherent sensitivity of receptors and their anticipated usage volumes on each link, as well as the function of the infrastructure on that same link.

Table 7.8 Sensitivity of Receptors

Link ID	Link Name	Sensitivity	Justification
8	Girton Rd	Medium	Residential properties front the road and it forms part of an arterial cycling route benefitting from off-street shared footway/cycleway facilities. Sensitivity is considered 'Medium' balancing presence of NMUs with availability of separated facilities.
9	Bunker's Hill	Medium	Private residential driveway also functions as a pedestrian and cycling connection. Although traffic levels are negligible with very low speeds, the shared use by NMUs in the absence of formal separation justifies a 'Medium' sensitivity grading.
16	Histon Rd	Medium	The link accommodates a range of users with narrow footways and painted on-street cycling facilities in both directions. Mixed frontage activity and width constraints contribute to a 'Medium' level of receptor sensitivity.
19	Mount Pleasant	High	Low-speed environment; however, narrow footways, high pedestrian activity, and lack of dedicated cycling infrastructure in the immediate vicinity of St. Edmunds College and a number of residential properties contribute to a 'High' level of receptor sensitivity.
20	Castle St (East of Mount Pleasant)	Medium	Mixed residential and retail frontages plus St Giles Church along key arterial route into the City. Restricted 20mph speed limit and existing infrastructure (footways and on-street painted cycling facilities) supports a 'Medium' sensitivity grading.
21	Chesterton Ln	Medium	Adequate footway width and intermittent cycling facilities in the context of nearby residential and institutional land uses. Sensitivity is considered 'Medium', reflecting the moderate vulnerability of existing users familiar with the link.
22	Magdalene St	High	High concentration of shops and pedestrian activity in a narrow street with no formal cycling provision. Vehicle speeds low given one-way priority section. Sensitivity is high due to high pedestrian activity and requirement for cyclists to share carriageway.
23	Northampton St	High	Westminster College, public house, residential and retail uses exist along the link that serves as a key radial route for vehicles. Adequate footway widths but no formal cycling facilities for NMUs. Mixture of high sensitivity receptors resulting in a 'High' sensitivity link.

Link ID	Link Name	Sensitivity	Justification
24	Turing Way (North)	Medium	Setback residential uses and provision of high-quality segregated pedestrian and cycle paths significantly reduce exposure. The infrastructure has been designed with future phases of development in mind, ensuring sufficient capacity for anticipated NMU and traffic volumes. Sensitivity is considered 'Medium'.
26	Eddington Ave (near Sainsbury's Access)	Medium	Mixed-use frontage including retail and education uses, supported by separated NMU infrastructure designed to accommodate future growth associated with the Proposed Development. Given the quality of provision and controlled traffic environment, sensitivity is considered 'Medium'.
28	Eddington Ave (South of Garrod St)	Medium	The corridor features high-quality shared footway/cycleway infrastructure which minimises potential conflict, even with adjacent mixed uses. The design reflects anticipated future NMU and vehicular demand linked to later development phases. Sensitivity is therefore considered 'Medium'.
29	Turing Way (North of Site Access)	Medium	Same rationale as above. Sensitivity is considered 'Medium'.
30	Turing Way (South of Site Access)	Medium	Same rationale as above. Sensitivity is considered 'Medium'.
44	Observatory Access	High	Access to educational facilities formed by narrow shared surface route with no formal segregation. Despite low vehicle speeds, sensitivity is considered 'High'.
45	Clerk Maxwell Rd	Medium	No active frontage but serves as access to educational facilities within 'West Cambridge'. Narrow footways and informal on-street parking reduce usable space for pedestrians. Sensitivity is considered 'Medium' balancing the presence of alternative, more attractive routes for NMUs.
52	Charles Babbage Rd (East of JJ Thomson Ave)	Medium	Located in the heart of the West Cambridge site, this corridor is fronted by a range of institutional and educational uses. It benefits from wide, high-quality shared footway/cycleway provision and established traffic calming measures. The link was designed to accommodate future increases in NMU and vehicular demand associated with ongoing development. Sensitivity is considered 'Medium' as a result.

Introduced

7.136 The identification of all receptors that are being introduced on the site as part of the Proposed Development are summarised in Table 7.9 and illustrated previously in Figure 7.3. The sensitivity of each receptor relates to the criteria set in Table 7.3, whilst the reasoning behind this categorisation is elaborated on further within the within the Framework Travel Plan submitted with the planning application.

Table 7.9 Sensitivity of Receptors

Link ID	Receptor Name	Sensitivity	Justification
27	Garrod Street (East Parcel Site Access)	Medium	These newly created links will provide key access points to the Proposed Development accommodating all receptors including pedestrians, cyclists, public transport, and service/emergency vehicles. Each has been designed with high levels of NMU activity in mind with mitigation embedded into streetscape and urban realm design. As such, these links are considered to have a 'Medium' sensitivity, balancing anticipated forecast user activity with high-quality infrastructure provision.
56	Cartwright Avenue – North	Medium	
57	Cartwright Avenue – East	Medium	

EMBEDDED MITIGATION

7.137 Below is a list of embedded mitigation measures (construction period and completed development), that are already included within the Proposed Development, and have therefore been assumed within the technical assessment.

7.138 Embedded mitigation refers to 'Primary Mitigation' which is embedded within the Proposed Development and are a fundamental part of the design the planning application is seeking consent for. These mitigation measures are illustrated and will be secured as part of the parameter plans and/or development specification.

Enabling, Demolition and Construction

- Detailed further in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**, there will be three primary access points to the site for construction purposes: Loverose Way (existing Phase 1 haul road) accessed from Madingley Road, Cartwright Avenue (new haul road) accessed from Huntingdon Road junction, and Garrod Street accessed from Madingley Road;
- Construction vehicles will primarily access site from Huntingdon Road. Loverose Way will be used for Plots F2 and F3 until the construction of Plot G commences. Garrod Street will be used for the construction of Phase 4;
- All operatives will be encouraged to use sustainable means of transport. Key transport nodes for operatives arriving via public transport and foot will include train stations (Cambridge and Cambridge North station) and nearby bus stops (Girton Road and Madingley Road Park and Ride);
- The use of bicycles as a form of transport by construction staff will be encouraged, with bicycle storage and shower facilities made available on-site. Generally, this will be adjacent to the site welfare compounds;
- A Framework CTMP has been prepared in support of the planning application to minimise disturbance that could potentially arise from construction traffic generated by the Proposed Development. The key elements of the CTMP include:
  - Routing traffic to the site to maintain heavy construction traffic on the adjacent SRN so far as possible and thereby minimise the impact of construction traffic on local communities;
  - Signage to identify access routes and to inform motorists that the local roads are accommodating construction traffic; and
  - Scheduling construction traffic movements (equipment and materials), when possible, to avoid the peak traffic periods at the beginning and end of each working day and other sensitive periods, to minimise potential disturbance to existing residents, users or visitors locally or safety impacts at junctions.
- Ensuring PRoWs are maintained open and where a temporary closure is required, an appropriate diversion and hoarding is provided;
- Wheel cleaning on-site to keep the local highway clear of mud and debris;
- Implementation of driver rules on and off site; and
- The principal contractor would liaise with stakeholders prior to commencing construction of the proposed Development and throughout work on-site.

Completed Development

- **Sustainable Community**: the Proposed Development will reduce private motorised travel through an integrated settlement pattern with a mix of housing, jobs, education and supporting uses. Strategic scale development of this size has significant advantages in transport-terms. Achieving a critical mass of people means that services, facilities and leisure opportunities can be provided on-site, meaning a significant amount of travel will occur only within the site itself. Likewise, the proposed mix of housing and jobs provides the opportunity for people to live and work within walking distance;
- **Access**: updated North-West Huntingdon Road site access to account for LTN 1/20 and reduced scale, whilst meeting future capacity demands;
- **Mobility Hubs**: provision of on-site mobility hubs to maximise facilities for all sustainable travel options and discourage car drivers as a travel mode;
- **Public Transport**: new and improved routing and frequency of services to meet the demands of existing and new residents; and

- **Walk and Cycle Network**: walk and cycle network to maximise desire lines and accommodate expected high active travel to meet desired Level of Service (LoS). Routes to maximise links between the Proposed Development, West Cambridge (across Madingley Road) and other local neighborhoods like Girton.

POTENTIAL EFFECTS

7.139 This section assesses the predicted traffic impacts associated with the Proposed Development during three key future years represents different phases of construction and occupation:

- 2027 – redistribution effects of introducing Cartwright Avenue;
- 2033 – peak construction and partial operation of the Proposed Development. Represents the busiest construction period due to multiple phases being brought forwards concurrently alongside the matching timeline of Proposed Development phased occupation; and
- 2038 – completed and operational development with no construction activity.

7.140 Each scenario reflects a distinct combination of construction activity and development occupation. The potential effects of site-generated traffic volumes on severance, non-motorised user delay, non-motorised user amenity, fear and intimidation, driver delay, road user and pedestrian safety. are considered for each.

7.141 For clarity, comparisons are made for each horizon year with the following baselines:

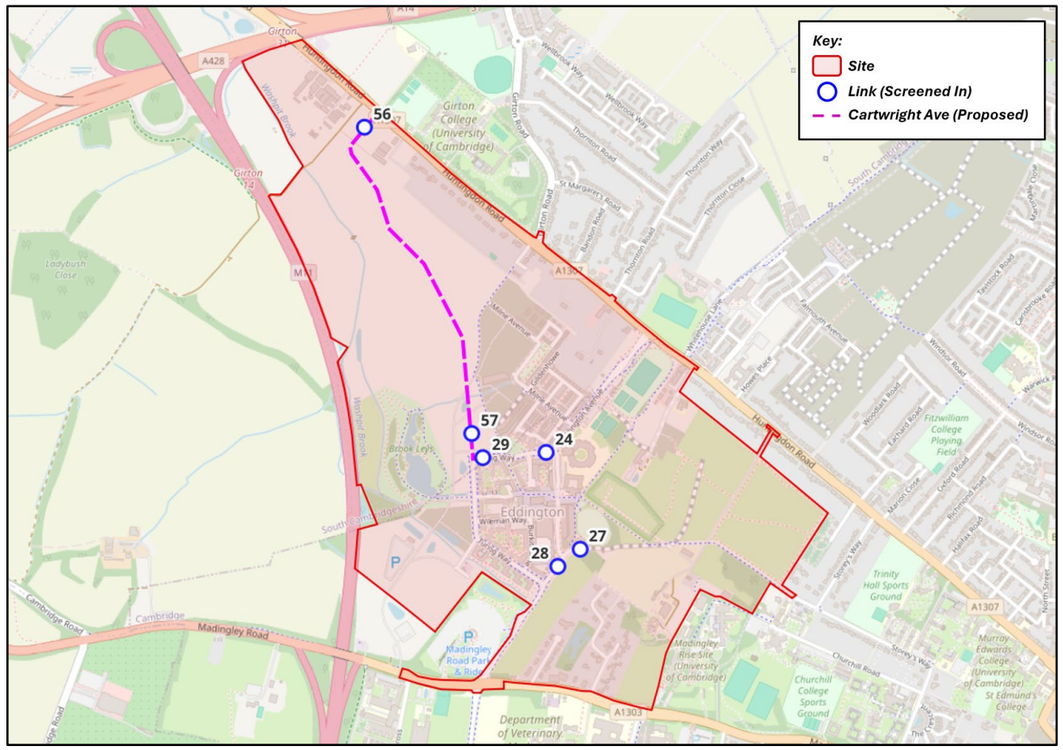
- **2027 Future Baseline (<u>without</u> Redistribution) vs 2027 Future Baseline (<u>with</u> Redistribution).** This allows for the impact of redistribution as a result of Cartwright Avenue to be gauged on study network links. There is no development traffic included in either scenario as this comparison specifically aims to assess the redistribution effect alone; and
- **2033/2038 Future Baseline (<u>with</u> Redistribution) vs 2033/2038 Future Baseline (<u>with</u> Redistribution) + Proposed Development.** This comparison allows the specific impact of Proposed Development traffic to be assessed, separate from the redistribution effect by keeping the redistribution a constant throughout this comparison scenario.

7.142 As a sensitivity test, a comparison will also be drawn for 2033 and 2038 against a future baseline without redistribution:

- **2033/2038 Future Baseline (<u>without</u> Redistribution) vs 2033/2038 Future Baseline (<u>with</u> Redistribution) + Proposed Development.** This comparison allows the cumulative impact of introducing both the redistribution and the new development, highlighting the overall change relative to a baseline without either.

7.143 In all tables presented in this report, link flows and analysis are only presented for links that exceed the threshold for further assessment as dictated by Rules 1 and 2. For completeness, Figure 7.9 illustrates the links that surpass the threshold for further assessment and are consequently reviewed in the following scenarios. Note, not all highlighted links are considered in all scenarios.

Figure 7.9 Links Screened In for Further Assessment



2027 Scenario – Effects of Redistribution

7.144 This section identifies and assesses the environmental impacts in 2027 to gauge the impact of redistribution on the network as a result of introducing Cartwright Avenue. This draws on the following comparison:

- 2027 Future Baseline (without Redistribution) vs 2027 Future Baseline (with Redistribution).

7.145 All links within the study area have been screened out for further assessment with the exception of those presented in Table 7.10 for total traffic. This is because the redistribution associated with the introduction of Cartwright Avenue is highly localised, with negligible impact on wider network flows. The reassignment affects only a small subset of network movements with the majority of links not exceeding the Rule 1 or Rule 2 screening thresholds. In particular, no Heavy-Duty Vehicles (HGV) movements are expected to be rerouted via Cartwright Avenue due to the nature of development access arrangements and the routing of service and delivery vehicles. As such, no further assessment is required for HGV impacts under this scenario.

7.146 Similarly, reductions in flows on surrounding links resulting from redistribution do not exceed the Rule 1 or Rule 2 thresholds for beneficial effects (i.e. a reduction of at least 30% in total vehicles or 10% in HGVs) and therefore remain screened out of further assessment. However, these reductions are anecdotally highlighted where relevant.

Table 7.10 Changes in Daily Total Traffic (2027 Interim) – Two-Way

ID	Link Name	2027 (Without Redistribution)	2027 (With Redistribution) + Proposed Development	Net Change	% Change
56	Cartwright Avenue - North	0	1,273	1,273	N/A
57	Cartwright Avenue - East	0	1,273	1,273	N/A

7.147 From Table 7.10, it can be seen that Link 56 (Cartwright Avenue – North) and Link 57 (Cartwright Avenue – East) trigger further assessment. They currently have no baseline traffic as they would be new links introduced as part of the Proposed Development.

7.148 For total traffic, the magnitude of impact cannot be assessed using a percentage change as per standard IEMA Guidelines. Where baseline conditions do not exist, professional judgement should be used in the consideration of absolute traffic volumes as a practical alternative under the lens of capacity and design standards of the road links.

7.149 The design of Cartwright Avenue is such that it will be able to accommodate daily traffic volumes of this magnitude in addition to development trips, which will be quantified later for future horizon years. From the perspective of vulnerable users, the street cross-section is designed to allow for generous separation from vehicle traffic, encourage slower vehicle speeds, and accommodate pedestrian and cyclist crossing needs through the provision of high-quality crossing facilities at appropriate intervals. In combination, these considerations ensure that any effects on delay, amenity, fear and intimidation, and road safety are mitigated against.

7.150 Outlined in full as part of the TA, the redistribution of baseline traffic via Cartwright Avenue allows for reduced vehicle flows on other sections of the network including A1307 (-11%), Turing Way (-18%), and Eddington Avenue (-15%).

7.151 In light of the design and expectations for Cartwright Avenue, the increase in daily traffic flows along Cartwright Avenue is considered to have a negligible magnitude of impact. As receptors with medium sensitivity, this would result in a Minor Adverse effect (not significant) on severance, non-motorised user delay, non-motorised user amenity, fear and intimidation, driver delay, road user and pedestrian safety. Given the intentional design of Cartwright Avenue, which already addresses key safety and amenity concepts, no additional mitigation is proposed.

2033 Interim Scenario (Including Demolition and Construction)

Redistributed Future Baseline

7.152 This section identifies and assesses the environmental impacts during the interim year of 2033 to account for the peak construction period alongside the operation of early phases. This draws on the following comparison:

- 2033 Future Baseline (with Redistribution) vs 2033 Future Baseline (with Redistribution) + Proposed Development + Construction Works.

7.153 All links within the study area have been screened out for further assessment with the exception of those presented in Table 7.11 and Table 7.12 for total traffic and HGVs, respectively.

Table 7.11 Changes in Daily Total Traffic (2033 Interim) – Two-Way

ID	Link Name	2033 (With Redistribution)	2033 (With Redistribution) + Proposed Development	Net Change	% Change
27	Garrod Street (East Parcel Site Access)	0	56	56	N/A
57	Cartwright Avenue - East	1,281	2,094	814	64%

7.154 In terms of total traffic, both Link 27 (Garrod Street) and Link 57 (Cartwright Avenue - East) trigger further assessment. Compared against a future baseline with redistribution, Cartwright Avenue would see a 64% increase in traffic with the addition of Proposed Development. Garrod Street, having no baseline traffic, cannot have its impact quantified using percentage change. However, in absolute terms, it would accommodate a total of 56 daily vehicle trips. This volume remains low and within the expected capacity of the road.

Table 7.12 Changes in Daily HGVs (2033 Interim) – Two-Way

ID	Link Name	2033 (With Redistribution)	2033 (With Redistribution) + Proposed Development	Net Change	% Change
27	Garrod Street (East Parcel Site Access)	0	40	40	N/A
56	Cartwright Avenue - North	0	45	45	N/A

7.155 In terms of HGV movements, both Link 27 (Garrod Street) and Link 56 (Cartwright Avenue – North) trigger further assessment due to the introduction of HGV trips related to the Proposed Development. As these links are either new or significantly re-purposed, absolute volumes are used instead of percentage changes. Garrod Street is projected to accommodate 40 HGVs per day, while Cartwright Avenue would carry 45 HGVs per day.

Severance

7.156 All links screened for further assessment (both in terms of total vehicles and HGVs) are considered medium sensitivity receptors given their proximity to a mixture of uses and intersections with pedestrian and cyclist desire lines, which have been appropriately designed for in the Proposed Development.

7.157 Cartwright Avenue – East (Link 57) would experience an increase of 64% in total traffic, which represents a medium magnitude of impact. However, this needs to be viewed in context. Although the increase appears substantial in percentage terms, Cartwright Avenue is a new link and the comparison is against a comparatively low baseline. The absolute volume of traffic on Cartwright Avenue, while increased, can be accommodated based on the designed capacity of the new spine road. Additionally, and as mentioned previously, Cartwright Avenue will incorporate many features to make it an attractive route for vulnerable users including generous separation from vehicle traffic, features to slow vehicle speeds, and high-quality crossing facilities at appropriate intervals. In turn, these will help mitigate potential severance impacts. Consequently, the increase in traffic on Cartwright Avenue – East is considered to be a low magnitude of impact in absolute terms, representing a Minor Adverse (not significant) effect on severance.

7.158 The low absolute traffic volume on Garrod Street is similarly considered to be low magnitude of impact. On a medium sensitivity receptor, this also represents a Minor Adverse (not significant) effect on severance.

7.159 In terms of HGVs, both Cartwright Avenue – North (Link 56) and Garrod Street (Link 27) are expected to accommodate relatively low numbers of HGVs (45 and 40 per day, respectively). Given the low absolute volumes and the design capacity of the links, the impact is considered low magnitude. On medium sensitivity receptors, this results in a Minor Adverse (not significant) effect.

Non-Motorised User Delay

7.160 For the background to determining NMU delay, refer back to Figure 7.2 and associated text with calculations for individual links detailed in **ES Volume 3, Appendix: Traffic and Movement – Annex 2**. The change in NMU delay on all three links screened for total traffic or HGVs would be 0.04 seconds or less, resulting in a negligible magnitude of impact on NMU delay. Such minimal increases in delay are unlikely to be perceptible to NMUs or materially affect crossing behaviour. Paired with receptors with medium sensitivity, the significance of effect on NMU delay is considered Minor Adverse (not significant) based on both quantitative assessment and professional judgement.

Non-Motorised User Amenity

7.161 The effects on amenity on all three links screened for total traffic or HGVs for both total vehicles and HGVs is considered to be Minor Adverse (not significant). This is consistent with the rationale applied to new links in the context of severance where changes in traffic volumes have been viewed in absolute terms, rather than percentage change. The absolute increases in traffic flows are modest and well within the capacity of proposed infrastructure, which includes good-quality pedestrian and cycle facilities suitable for forecast receptors using these links. As such, any marginal reduction in perceived amenity is unlikely to materially affect NMU activity, particularly in light of the strong mitigation already embedded in the design.

Fear and Intimidation on and by Road Users

7.162 The effects on fear and intimidation on all three links for both total vehicles and HGVs is considered to be Minor Adverse (not significant). This reflects both the relatively modest changes in vehicle volumes and the context of the highway environment. For example, the presence of traffic calming measures, low speed limits, and separation from general traffic on some links helps to mitigate the perception of increased risk for sensitive receptors. Based on this context and professional judgement, it is unlikely that the proposed redistribution of trips would lead to any noticeable change in perceived safety or comfort for pedestrians or cyclists.

Driver Delay

7.163 The level of flow along the three links screened has been designed for in terms of lane width and crossing points, accordingly for each link, to avoid delay. The new North-West Huntingdon Road site access and Turing Way at the northern and southern ends of Cartwright Avenue are shown within the TA to operate within capacity in the future 2038 design year with the Proposed Development fully occupational. As all the screened links are considered to have medium sensitivity, this negligible magnitude of impact results in a Minor Adverse (not significant) effect.

Road User & Pedestrian Safety

7.164 A detailed analysis of collision data has shown that no accident clusters were identified, and there were no inherent causation factors suggesting any significant road safety issues within the study area.

7.165 The proposed design of Cartwright Avenue and the internal transport network within the Proposed Development has been developed in line with relevant highway standards. The spine road design includes features aimed at enhancing road safety including appropriate lane widths, crossing points at strategic intervals, traffic calming features to reduce vehicle speeds, segregated cycle lanes, and footways with adequate separation from the carriageway.

7.166 A Road Safety Audit (RSA) has been completed and no outstanding safety concerns have been identified regarding the design of Cartwright Avenue and junctions either end. Given the absence of accident clusters and the comprehensive design of Cartwright Avenue to mitigate against safety concerns, the effect of the forecast change in traffic volumes along this spine road is considered to be Negligible (not significant)

Public Transport Users

7.167 As outlined in the TA, bus trip distribution heat maps with existing bus routes overlaid show that all key origins and destinations expected by bus are served by existing local services, including the U1 & 2. The only key origin & destination currently not served by an existing bus route is the north-east growth area and this will be served by the Orbital route in the future.

7.168 Also as detailed with the TA, a one hour peak of 281 bus trips to/from west Cambridge plus 36 bus trips to/from south Cambridge (CBC), totalling 317 bus trips are expected to be generated from the Proposed Development. Over a three hour peak period 585 bus trips to/from west Cambridge plus 67 bus trips to/from south Cambridge, totalling 652 bus trips are expected. These key destinations are already served by the U1 & U2 and 317 hourly trips (652 over a three hour peak) would translate into between 36 - 53 trips every 10 minutes at peak times. Increasing the U1 & U2 to a 10 minute frequency, plus other existing services linking into Cambridge City and then south to CBC via the busway, will accommodate these expected Proposed Development trips by bus. The S106 associated with the OPP includes for uplifting existing U1 and U2 services to a 10 minute frequency. Furthermore, accounting for changing working patterns, passengers are expected to 'peak spread' their journeys rather than focus on one peak hour.

7.169 Residential dwellings forming part of the Proposed Development will be within 400m of a bus stop and bus stops will be within 800m of each other.

7.170 The effects on public transport users is considered to be Minor Adverse (not significant).

Future Baseline with No Redistribution (Sensitivity Test)

7.171 This section identifies and assesses the environmental impacts during the interim year of 2033 to account for the peak construction period alongside the operation of early phases. This draws on the following comparison:

- 2033 Future Baseline (without Redistribution) vs 2033 Future Baseline (with Redistribution) + Proposed Development

7.172 All links within the study area have been screened out for further assessment with the exception of those presented in Table 7.13 and Table 7.14 for total traffic and HGVs, respectively.

Table 7.13 Changes in Daily Total Traffic (2033 Interim) – Two-Way

ID	Link Name	2033 (Without Redistribution)	2033 (With Redistribution) + Proposed Development	Net Change	% Change
27	Garrod Street (East Parcel Site Access)	0	56	56	N/A
56	Cartwright Avenue - North	0	1638	1638	N/A
57	Cartwright Avenue - East	0	2094	2094	N/A

7.173 Link 27 (Garrod Street), Link 56 (Cartwright Avenue – North), and Link 57 (Cartwright Avenue – East) trigger further assessment. Since these links are either new or significantly repurposed, absolute volumes are used rather than percentage changes as they are compared to a baseline with no traffic. Garrod Street, having no baseline traffic, would accommodate 56 daily vehicle trips, which remains low and within the expected capacity of the road. Cartwright Avenue is projected to carry between 1,638 - 2,094 daily vehicle trips, the majority of which comprises redistributed baseline traffic via the new link.

7.174 Although they have been formally screened out of further assessment, the following commentary outlines how the redistribution of baseline traffic via Cartwright Avenue allows for reduced vehicle flows on other sections of the network. This is particularly evident in this Interim scenario given that the Proposed Development occupation would still be comparatively low, resulting in minimal development (Phase 2) generated trips along the Eddington Avenue/Turing Way corridor.

7.175 For reference, the most significant reductions in total vehicles in percentage terms are as follows:

- Link 7 - A1307 (East of West Parcel Site Access): -10.5%;
- Link 10 - A1307 (West of Eddington Road): -5.8%;;
- Link 24 - Turing Way (North): -12.2%;
- Link 25 - Eddington Avenue (South of A1307): -10.4%; and
- Link 29 - Turing Way (North of Site Access): -12.2%.

7.176 The complete set of link flows for all scenarios, including net differences in terms of absolute trips plus percentage changes, can be viewed in the TA.

Table 7.14 Changes in Daily HGVs (2033 Interim) – Two-Way

ID	Link Name	2033 (Without Redistribution)	2033 (With Redistribution) + Proposed Development	Net Change	% Change
27	Garrod Street (East Parcel Site Access)	0	40	40	N/A
56	Cartwright Avenue - East	0	45	45	N/A

7.177 In terms of HGV movements, both Link 27 (Garrod Street) and Link 56 (Cartwright Avenue – East) trigger further assessment due to the introduction of HGV trips related to the Proposed Development. As these links are either new or significantly re-purposed, absolute volumes are used instead of percentage changes. It is assumed that no HGV trips would redistribute from the baseline, so the projected volumes of 40 HGVs per day on Garrod Street and 45 HGVs per day on Cartwright Avenue are exclusively generated by the Proposed Development.

Severance

7.178 All three links screened for further assessment are considered medium sensitivity receptors given their proximity to a mixture of uses and intersections with pedestrian and cyclist desire lines, which have been appropriately designed for in the masterplan.

7.179 In this sensitivity scenario, the focus is to identify any additional effects beyond those observed in the core scenarios, where only Proposed Development trips were previously assessed. It is important to note that most of the traffic observed on Cartwright Avenue – North (Link 56) and Cartwright Avenue – East (Link 57) is predominantly attributable to redistributed baseline traffic, rather than being generated directly by the Proposed Development. Therefore, any effects identified here reflect the combined impact of both redistribution and the Proposed Development, rather than the Proposed Development alone.

7.180 Cartwright Avenue – North (Link 56) and Cartwright Avenue – East (Link 57) are projected to carry between 1,638 and 2,094 daily vehicle trips, respectively, mainly comprising redistributed baseline traffic. Although these volumes appear high in absolute terms, the new links are designed to accommodate them and are judged to result in a low magnitude of impact, resulting in a Minor Adverse effect (not significant).

7.181 Garrod Street (Link 27), as a new link, would carry 56 daily vehicle trips, considered to be a low volume relative to the expected capacity of this link. This is deemed to be a low magnitude of impact, resulting in a Minor Adverse effect (not significant).

7.182 In terms of HGV movements, both Cartwright Avenue – North (Link 56) and Garrod Street (Link 27) would accommodate relatively low numbers of HGVs (45 and 40 per day, respectively), exclusively generated by the Proposed Development. The low volumes and link capacity result in a low magnitude of impact, resulting in a Minor Adverse (not significant) effect.

Non-Motorised User Delay

7.183 The change in NMU delay on all three links screened for total traffic or HGVs would be 0.04 seconds or less, resulting in a negligible magnitude of impact on NMU delay. Such minimal increases in delay are unlikely to be perceptible to NMUs or materially affect crossing behaviour. Paired with receptors with medium sensitivity, the significance of effect on NMU delay is considered Minor Adverse (not significant) based on both quantitative assessment and professional judgement.

Non-Motorised User Amenity

7.184 The effects on amenity on all three links screened for total traffic or HGVs for both total vehicles and HGVs is considered to be Minor Adverse (not significant). This is consistent with the rationale applied to new links in the context of severance where changes in traffic volumes have been viewed in absolute terms, rather than percentage change. The absolute increases in traffic flows are modest and well within the capacity of proposed infrastructure, which includes good-quality pedestrian and cycle facilities suitable for forecast receptors using these links. As such, any marginal reduction in perceived amenity is unlikely to materially affect NMU activity, particularly in light of the strong mitigation already embedded in the design.

Fear and Intimidation on and by Road Users

7.185 The effect on fear and intimidation on all three links for both total vehicles and HGVs is considered to be Minor Adverse (not significant). This reflects both the relatively modest changes in vehicle volumes and the context of the highway environment. For example, the presence of traffic calming measures, low speed limits, and separation from general traffic on some links helps to mitigate the perception of increased risk for sensitive receptors. Based on this context and professional judgement, it is unlikely that the proposed redistribution of trips would lead to any noticeable change in perceived safety or comfort for pedestrians or cyclists.

Driver Delay

7.186 The level of flow along the links screened has been designed for in terms of lane width and crossing points, for each link accordingly, to avoid delay. Turing Way is an existing link that was consented, designed and constructed to accommodate the 2013 OPP consented trip budget. As the trip generation from the Proposed Development falls within this 2013 OPP trip budget, driver delay is deemed to be negligible on this existing link.

7.187 The new North-West Huntingdon Road site access and Turing Way at the northern and southern ends of Cartwright Avenue are shown within the TA to operate within capacity in the future 2033 design year with the Proposed Development fully occupational.

7.188 As all the screened links are considered to have medium sensitivity, this negligible magnitude of impact results in a Minor Adverse (not significant) effect.

Road User & Pedestrian Safety

7.189 Like the scenario with redistribution, the robust design of Cartwright Avenue and Garrod Street as new access points, plus the absence of existing safety issues means the effect of the forecast change in traffic volumes on accidents and safety for all screened links is considered to be Negligible (not significant).

Public Transport Users

7.190 As outlined in the TA, bus trip distribution heat maps with existing bus routes overlaid show that all key origins and destinations expected by bus are served by existing local services, including the U1 & 2. The only key origin and destination currently not served by an existing bus route is the NE growth area and this will be served by the Orbital route in the future.

7.191 Also as detailed with the TA, a one hour peak of 281 bus trips to/from west Cambridge plus 36 bus trips to/from south Cambridge (CBC), totalling 317 bus trips are expected to be generated from the Proposed Development. Over a three hour peak period 585 bus trips to/from west Cambridge plus 67 bus trips to/from south Cambridge, totalling 652 bus trips are expected. These key destinations are already served by the U1 & U2 and 317 hourly trips (652 over a three hour peak) would translate into between 36 - 53 trips every 10 minutes at peak times. Increasing the U1 & U2 to a 10 minute frequency, plus other existing services linking into Cambridge City and then south to CBC via the busway, will accommodate these expected Proposed Development trips by bus. Furthermore, accounting for changing working patterns, passengers are expected to 'peak spread' their journeys rather than focus on one peak hour.

7.192 Residential dwellings forming part of the Proposed Development will be within 400m of a bus stop and bus stops will be within 800m of each other.

7.193 The effect on public transport users is considered to be Minor Adverse (not significant).

2038 Completed Development

Redistributed Future Baseline

7.194 This section identifies and assesses the environmental impacts during the completed development year of 2038 to account for the fully operational scenario with construction completed. This draws on the following comparison:

- 2038 Future Baseline (with Redistribution) vs 2038 Future Baseline (with Redistribution) + Proposed Development

7.195 All links within the study area have been screened out for further assessment with the exception of those presented in Table 7.15 and Table 7.16 for total traffic and HGVs, respectively.

Table 7.15 Changes in Daily Total Traffic (2038 Completed Development) – Two-Way

ID	Link Name	2038 (With Redistribution)	2038 (With Redistribution) + Proposed Development	Net Change	% Change
24	Turing Way (North)	7,677	10,045	2,369	31%
27	Garrod Street (East Parcel Site Access)	0	2,568	2,568	N/A
28	Eddington Avenue (South of Garrod Street)	3,519	6,087	2,568	73%
29	Turing Way (North of Site Access)	7,677	10,045	2,369	31%
56	Cartwright Avenue - North	1,446	2,437	991	69%
57	Cartwright Avenue - East	1,446	2,959	1,513	105%

7.196 In terms of total traffic, multiple links trigger further assessment due to notable increases compared to the 2038 future baseline (with redistribution).

7.197 Like the Interim scenario, Cartwright Avenue (Links 56 and 57) show increases of 69% and 105%, respectively. These high percentage changes reflect the introduction of Proposed Development traffic in addition to redistributed baseline traffic using this new corridor. Garrod Street (Link 27), as a new main access to the eastern parcel, does not have a baseline volume and the total volume of 2,568 daily vehicle trips represent new traffic on this link.

7.198 Turing Way (Link 24 and Link 29) and Eddington Avenue (Link 28) form the north-south route between Madingley Road and Huntingdon Road. With Cartwright Avenue and Garrod Street feeding into this key connector, these links show increases, ranging from 31% to 73%.

7.199 The overall increase on these key links is consistent with the intended network hierarchy, and the road design standards have been established to manage these volumes.

Table 7.16 Changes in Daily HGVs (2038 Completed Development) – Two-Way

ID	Link Name	2038 (With Redistribution)	2038 (With Redistribution) + Proposed Development	Net Change	% Change
27	Garrod Street (East Parcel Site Access)	0	34	34	N/A
56	Cartwright Avenue - North	0	10	10	N/A
57	Cartwright Avenue - East	0	10	10	N/A

7.200 In terms of HGV movements, both Cartwright Avenue (Links 56 and 57) and Garrod Street (Link 27) trigger further assessment as they introduce new HGV flows generated by NWC. The projected HGV volumes on Cartwright Avenue (10 per day on each link) and Garrod Street (34 per day) are low in absolute terms.

Severance

7.201 All six links screened for further assessment in the 2038 Completed Development scenario are considered medium sensitivity receptors, given their proximity to a mixture of uses and intersections with pedestrian and cyclist desire lines, which have been appropriately designed for in the Proposed Development.

7.202 Cartwright Avenue – East (Link 57) would experience a 105% increase in total traffic, which represents a high magnitude of impact when viewed in isolation. However, as discussed in the 2033 Interim scenario, this needs to be viewed in context. The increase appears substantial in percentage terms due to the low baseline volume, as Cartwright Avenue is a new link. The absolute volume of traffic on Cartwright Avenue, although increased, remains within the design capacity of the new spine road. As previously outlined, Cartwright Avenue has been designed to accommodate higher traffic volumes associated with the completed Proposed Development, incorporating generous separation from vehicle traffic, features to manage vehicle speeds, and high-quality crossing facilities at appropriate intervals. Therefore, the increase in traffic on Cartwright Avenue – South is considered a low magnitude of impact in absolute terms, representing a Minor Adverse (not significant) effect on severance.

7.203 Garrod Street (Link 27), serving as a new access road to the eastern parcel, would accommodate 2,568 daily vehicle trips. As with the 2033 Interim scenario, the absolute volume is expected given its intended function. This level of increase, which is more notable due to the lack of a baseline, is assessed as a low magnitude of impact, leading to a Minor Adverse (not significant) effect on severance.

7.204 The north-south route between Madingley Road and Huntingdon Road (Links 24, 28, and 29) experiences increases in traffic triggering further assessment due to the cumulative effect of Cartwright Avenue and Garrod Street feeding into this key strategic link bisecting Phase 1 of the 2013 OPP and Phase 2 of the Proposed Development.

7.205 Turing Way (Links 24 and 29) shows an increase of 31%, which is considered a low magnitude of impact. On a medium sensitivity receptor, this results in a Minor Adverse (not significant) effect.

7.206 Eddington Avenue (Link 28) is forecast to experience a 73% increase in total traffic. Whilst typically classified as a high magnitude of impact, the increase should be assessed with the understanding that Turing Way/Eddington Avenue was originally expected to handle a higher volume of traffic than is now forecast for Future Phases of the Proposed Development. The Transport Assessment provides further insight, highlighting that the level of trip generation now forecast for the Proposed Development is substantially lower than the volumes anticipated during the 2013 OPP. Therefore, despite the projected 73% increase, the already consented, constructed and occupied road design and capacity remain well-suited to accommodate the projected volumes without leading to severance. Viewed in this context, it is considered appropriate to classify

the increase in traffic volumes as a low magnitude of impact, resulting in a Minor Adverse (not significant) effect on severance.

7.207 In terms of HGV movements, the 2038 Completed Development scenario introduces new HGV flows on Cartwright Avenue (Links 56 and 57) and Garrod Street (Link 27) as a result of the Proposed Development. The forecast HGV volumes are 10 per day on each Cartwright Avenue link and 34 per day on Garrod Street.

7.208 The Proposed Development will build on the exemplar active travel network provided by Phase 1 of the 2013 OPP by providing a site-wide active travel network that will link into the wider Cambridge network and provide connections to strategic locations, such as; Girton, West Cambridge, Darwin Green and Cambridge City. The Proposed Development will therefore remove the existing severance that currently exists between Huntingdon Road and Madingley Road north-west of Eddington (i.e. through the existing grassland fields and construction areas where the Future Phases will be located).

7.209 Given the low absolute numbers and the design capacity of these routes to accommodate occasional HGV movements, the magnitude of impact is considered low. On medium sensitivity receptors, this results in a Minor Adverse (not significant) effect.

Non-Motorised User Delay

7.210 The change in NMU delay on all links screened for total traffic or HGVs would be 0.58 seconds or less, resulting in a negligible magnitude of impact on pedestrian delay. Such minimal increases in delay are unlikely to be perceptible to NMUs or materially affect crossing behaviour. Paired with receptors with medium sensitivity, the significance of effect on NMU delay is considered Minor Adverse (not significant) based on both quantitative assessment and professional judgement.

Non-Motorised User Amenity

7.211 The increase in two-way total traffic flows on Cartwright Avenue – East (Link 57) is 105%, which represents a low magnitude of impact in terms of amenity. All other links, both in terms of total traffic or HGVs, are forecast to experience a change in volumes equating to a negligible magnitude of impact. In all cases, the effect on amenity is considered to be Minor Adverse (not significant). This is consistent with the rationale applied to new links in the context of severance where changes in traffic volumes have been viewed in absolute terms, rather than percentage change. The absolute increases in traffic flows are modest and well within the capacity of proposed infrastructure, which includes good-quality pedestrian and cycle facilities suitable for forecast receptors using these links. As such, any marginal reduction in perceived amenity is unlikely to materially affect NMU activity, particularly in light of the strong mitigation already embedded in the design.

7.212 Furthermore, the site-wide active travel network being provided by the Proposed Development will link into the wider Cambridge network and provide connections to existing amenities in locations such as; Girton, West Cambridge, Darwin Green and Cambridge City. The Proposed Development will also provide links from these existing communities to new amenities being provided on site as well as new Proposed Development residents and employees.

Fear and Intimidation On and By Road Users

7.213 The increase in traffic flows for all links, both in terms of total vehicles and HGVs, is classified as a negligible magnitude of impact for fear and intimidation. On medium sensitivity receptors, this is considered to be a Minor Adverse (not significant) effect. This reflects both the relatively modest changes in vehicle volumes and the context of the highway environment. For example, the presence of traffic calming measures, low speed limits, and separation from general traffic on some links helps to mitigate the perception of increased risk for sensitive receptors. Based on this context and professional judgement, it is unlikely that the proposed redistribution of trips would lead to any noticeable change in perceived safety or comfort for pedestrians or cyclists.

7.214 Furthermore, the upgrades to cycle infrastructure and new NMU crossings being provided by the Proposed Development along the northern section of Huntingdon Road will help to reduce fear and intimidation for NMUs.

Driver Delay

7.215 The level of flow along the links screened has been designed for in terms of lane width and crossing points, for each link accordingly, to avoid delay. Eddington Avenue and Turing Way are existing links that were consented, designed and constructed to accommodate the consented 2013 OPP trip budget. As the Proposed Development trip generation falls within this previously consented trip budget, drive delay is deemed to be negligible on these links.

7.216 The new North-West Huntingdon Road site access and Turing Way at the northern and southern ends of Cartwright Avenue are shown within the TA to operate within capacity in the future 2038 design year with the Proposed Development fully occupational.

7.217 The existing Huntingdon Road / Eddington Avenue junction, at the northern end of Eddington Avenue, was designed to accommodate the 2013 OPP consented trip budget. As the Proposed Development trip generation falls within this previously consented trip budget, drive delay is deemed to be negligible at this junction. Furthermore, as shown within the TA, this junction is shown to operate with betterment in the critical AM peak period when comparing the future years with the Proposed Development against future baseline years. In the PM peak, the Proposed Development has a slight negative impact on capacity when comparing the future years with the Proposed Development against future baseline years. Overall, the embedded redistribution of traffic mitigates the impact of the Proposed Development at this junction cumulatively across both peaks combined. Further mitigation is however proposed to improve capacity through changes to signal timings.

7.218 As all the screened links are considered to have medium sensitivity, this negligible magnitude of impact results in a Minor Adverse (not significant) effect.

Road User & Pedestrian Safety

7.219 The review of accidents and safety for the 2038 Completed Development scenario mirrors that applied for the Interim scenario. Conclusions drawn on collision data, which identified no accident clusters and no inherent causation factors, extends to all links in the study network including those screened for this scenario. Additionally, the completion of an RSA with no outstanding safety concerns for the newly proposed links of Cartwright Avenue and Garrod Street.

7.220 The traffic generated by Proposed Development phases introduced between 2033 and 2038 is not expected to materially impact the effect on accidents and safety. Given this, the effect of the forecast change in traffic volumes on accidents and safety for all screened links is considered to be Negligible (not significant)

Public Transport Users

7.221 As outlined in the TA, bus trip distribution heat maps with existing bus routes overlaid show that all key origins and destinations expected by bus are served by existing local services, including the U1 & 2. The only key origin & destination currently not served by an existing bus route is the North-East growth area and this will be served by the Orbital route in the future.

7.222 Also as detailed with the TA, a one hour peak of 281 bus trips to/from west Cambridge plus 36 bus trips to/from south Cambridge (CBC), totalling 317 bus trips are expected to be generated from the Proposed Development. Over a three hour peak period 585 bus trips to/from west Cambridge plus 67 bus trips to/from south Cambridge, totalling 652 bus trips are expected. These key destinations are already served by the U1 & U2 and 317 hourly trips (652 over a three hour peak) would translate into between 36 - 53 trips every 10 minutes at peak times. Increasing the U1 & U2 to a 10 minute frequency, plus other existing services linking into Cambridge City and then south to CBC via the busway, will accommodate these expected Proposed Development trips by bus. Furthermore, accounting for changing working patterns, passengers are expected to 'peak spread' their journeys rather than focus on one peak hour.

7.223 Residential dwellings forming part of the Proposed Development will be within 400m of a bus stop and bus stops will be within 800m of each other.

7.224 The effect on public transport users is considered to be Minor Adverse (not significant).

Future Baseline with No Redistribution (Sensitivity Test)

7.225 This section identifies and assesses the environmental impacts during the completed development year of 2038 to account for the fully operational scenario with construction completed. This draws on the following comparison:

- 2038 Future Baseline (without Redistribution) vs 2038 Future Baseline (with Redistribution) + Proposed Development

7.226 All links within the study area have been screened out for further assessment with the exception of those presented in Table 7.17 and Table 7.18 for total traffic and HGVs, respectively.

Table 7.17 Changes in Daily Total Traffic (2038 Completed Development) – Two-Way

ID	Link Name	2038 (Without Redistribution)	2038 (With Redistribution) + Proposed Development	Net Change	% Change
27	Garrod Street (East Parcel Site Access)	0	2,568	2,568	N/A
28	Eddington Avenue (South of Garrod Street)	3,519	6,087	2,568	73%
56	Cartwright Avenue - North	0	2,437	2,437	N/A
57	Cartwright Avenue - East	0	2,959	2,959	N/A

7.227 In terms of total traffic, multiple links trigger further assessment when compared to the 2038 future baseline (without redistribution). Link 27 (Garrod Street), Link 56 (Cartwright Avenue – North), and Link 57 (Cartwright Avenue – East) trigger further assessment. As these links are compared to a future baseline with no redistribution (i.e., no traffic), absolute volumes are used rather than percentage changes.

7.228 Eddington Avenue (Link 28) shows an increase of 2,568 daily vehicle trips (73%). With Cartwright Avenue and Garrod Street (Proposed Development access points) feeding into this key connector, increases of this magnitude are to be expected.

7.229 Outlined in full as part of the TA, the redistribution of baseline traffic via Cartwright Avenue allows for the following changes in vehicle flows on sections of the network that redistributed traffic is forecast to be removed from. Unlike the Interim scenario, occupation of the Proposed Development is expected to reach 100% in 2038 and therefore the following changes are reflective of, firstly, removal of through-traffic from Eddington Avenue, Turing Way, and sections of Madingley Road and Huntingdon Road and, secondly, the addition of Proposed Development trips to these same links.

7.230 For reference, the most significant reductions in total vehicles in percentage terms are as follows:

- Link 7 - A1307 (East of West Parcel Site Access): -2.3%;
- Link 10 - A1307 (West of Eddington Avenue): -0.9%;
- Link 24 - Turing Way (North): +10.1%;
- Link 25 - Eddington Avenue (South of A1307): +8.8%; and
- Link 29 - Turing Way (North of Site Access): +10.1%.

7.231 It is useful to further compare this against the 2038 Completed Development (with Redistribution) scenario where the same links experience increases in total traffic ranging from +6.5% (Link 10 – A1307) to +30.9% (Turing Way). This demonstrates the full impact of Cartwright Avenue opening on these key network links, where the impact of new development trips is significantly mitigated against when compared against a future baseline without redistribution.

For example:

- 'Without Redistribution': volumes on Link 10 increase by +6.5%
- 'With Redistribution': volumes on Link 10 reduce by -0.9%, because Cartwright Ave is carrying redistributed baseline traffic instead, which would otherwise be using Link 10.

7.232 The redistribution of traffic via Cartwright Avenue leads to reductions or, at least, smaller increases in volumes on key network links when compared to a scenario without redistribution.The complete set of link flows for all scenarios, including net differences in terms of absolute trips plus percentage changes, can be viewed in the TA.

7.233 In terms of HGV movements, both Cartwright Avenue (Links 56 and 57) and Garrod Street (Link 27) trigger further assessment as they introduce new HGV flows generated by the Proposed Development. The projected HGV volumes on Cartwright Avenue (10 per day on each link) and Garrod Street (34 per day) are low in absolute terms. These mirror the 'with redistribution' scenario given that no future baseline HGV movements are expected to redistribute via Cartwright Avenue.

Table 7.18 Changes in Daily HGVs (2038 Completed Development) – Two-Way

ID	Link Name	2038	2038 + Proposed Development	Net Change	% Change
27	Garrod Street (East Parcel Site Access)	0	34	34	n/a
56	Cartwright Avenue - North	0	10	10	n/a
57	Cartwright Avenue - East	0	10	10	n/a

Severance

7.234 All four links screened for further assessment in the 2038 Completed Development scenario are considered medium sensitivity receptors.

7.235 Like the Interim scenario, this sensitivity test is undertaken to identify any additional effects beyond those observed in the core scenarios, where only changes due to development trips were previously assessed. It is important to note that most of the traffic observed on Cartwright Avenue – North (Link 56) and Cartwright Avenue – East (Link 57) is predominantly attributable to redistributed baseline traffic, rather than being generated directly by the Proposed Development. Therefore, any effects identified here reflect the combined impact of both redistribution and the Proposed Development, rather than the Proposed Development alone.

7.236 Following the same rationale as before, Cartwright Avenue is designed to accommodate the absolute increase in volumes on Link 56 and Link 57 with proposed lane widths, traffic calming, segregated cycle facilities, and crossing points all intended to mitigate potential severance impacts. As a result, the increase in traffic on Cartwright Avenue (Link 56 and Link 57) is considered to have a low magnitude of impact, representing a Minor Adverse (not significant) effect.

7.237 Garrod Street (Link 27), serving as a new access road to the eastern parcel, would accommodate 2,568 daily vehicle trips (all Proposed Development, rather than redistribution). As with the 2033 Interim scenario, this volume is consistent with the intended function of the road and does not exceed design capacity. This is assessed as a low magnitude of impact, leading to a Minor Adverse (not significant) effect on severance.

7.238 The Proposed Development will build on the exemplar active travel network provided by Phase 1 of the 2013 OPP by providing a site-wide active travel network that will link into the wider Cambridge network and provide connections to strategic locations, such as; Girton, West Cambridge, Darwin Green and Cambridge City. The Proposed Development will therefore remove the existing severance that currently exists between Huntingdon Road and Madingley Road north-west of Eddington (i.e. through the existing grassland fields and construction areas where the Proposed Development will be located).

7.239 Eddington Avenue (Link 28) shows an increase of 2,568 daily vehicle trips (73%). While this may initially appear as a high magnitude of impact, it has been highlighted already that this link was originally forecast to carry a higher volume of traffic as consented within the 2013 OPP, than is now predicted for the Proposed Development. Therefore, despite the projected increase, the already consented, constructed and occupied road design and capacity remain adequate, and the impact is classified as low magnitude, resulting in a Minor Adverse (not significant) effect on severance.

7.240 Furthermore, the Proposed Development will build on the exemplar active travel network provided by Phase 1 of the 2013 OPP by providing a site-wide active travel network that will link into the wider Cambridge network and provide connections to strategic locations, such as; Girton, West Cambridge, Darwin Green and Cambridge City. The Proposed Development will therefore remove the existing severance that currently exists between Huntingdon Road and Madingley Road north-west of Eddington (i.e. through the existing grassland fields and construction areas where the Proposed Development will be located).

Non-Motorised User Delay

7.241 The change in NMU delay on all links screened for total traffic or HGVs would be 1.77 seconds or less, resulting in a negligible magnitude of impact on NMU delay. Such minimal increases in delay are unlikely to be perceptible to NMUs or materially affect crossing behaviour. Paired with receptors with medium sensitivity, the significance of effect on NMU delay is considered Minor Adverse (not significant) based on both quantitative assessment and professional judgement.

Non-Motorised User Amenity

7.242 The effect on amenity on all links screened for total traffic or HGVs for both total vehicles and HGVs is considered to be Minor Adverse (not significant). This is consistent with the rationale applied to new links in the context of severance where changes in traffic volumes have been viewed in absolute terms, rather than percentage change. The absolute increases in traffic flows are modest and well within the capacity of proposed infrastructure, which includes good-quality pedestrian and cycle facilities suitable for forecast receptors using these links. As such, any marginal reduction in perceived amenity is unlikely to materially affect NMU activity, particularly in light of the strong mitigation already embedded in the design.

7.243 Furthermore, the site-wide active travel network being provided by the Proposed Development will link into the wider Cambridge network and provide connections to existing amenities in locations such as; Girton, West Cambridge, Darwin Green and Cambridge City. The Proposed Development will also provide links from these existing communities to new amenities being provided on site as well as new residents and employees.

Fear and Intimidation on and by Road Users

7.244 The increase in traffic flows for all links, both in terms of total vehicles and HGVs, is classified as a negligible magnitude of impact for fear and intimidation. On medium sensitivity receptors, this is considered to be Minor Adverse (not significant). This reflects both the relatively modest changes in vehicle volumes and the context of the highway environment. For example, the presence of traffic calming measures, low speed limits, and separation from general traffic on some links helps to mitigate the perception of increased risk for sensitive receptors. Based on this context and professional judgement, it is unlikely that the proposed redistribution of trips would lead to any noticeable change in perceived safety or comfort for pedestrians or cyclists

7.245 Furthermore, the upgrades to cycle infrastructure and new NMU crossings being provided by the Proposed Development along the northern section of Huntingdon Road will help to reduce fear and intimidation for NMUs.

Driver Delay

7.246 The level of flow along the links screened has been designed for in terms of lane width and crossing points, for each link accordingly, to avoid delay. Eddington Avenue and Turing Way are existing links that were consented, designed and constructed to accommodate the 2013 OPP consented trip budget. As the Proposed Development falls within this previously consented trip budget, drive delay is deemed to be negligible on these links.

7.247 The new North-West Huntingdon Road site access and Turing Way at the northern and southern ends of Cartwright Avenue are shown within the TA to operate within capacity in the future 2038 design year with full Proposed Development occupation.

7.248 The existing Huntingdon Road / Eddington Avenue junction, at the northern end of Eddington Avenue, was designed to accommodate the 2013 OPP consented trip budget. As the Proposed Development falls within this previously consented trip budget, driver delay is deemed to be negligible at this junction. Furthermore, as shown within the TA, this junction is shown to operate with betterment in the critical AM peak period when comparing the future years with the Proposed Development against future baseline years. In the PM peak, the Proposed Development has a slight negative impact on capacity when comparing the future years with the Proposed Development against future baseline years. Overall, the embedded redistribution of traffic mitigates the impact of the Proposed Development at this junction cumulatively across both peaks combined. Further mitigation is however proposed to improve capacity through changes to signal timings.

7.249 As all the screened links are considered to have medium sensitivity, this negligible magnitude of impact results in a Minor Adverse (not significant) effect.

Road User & Pedestrian Safety

7.250 The review of accidents and safety for the 2038 Completed Development scenario mirrors that applied for all previous scenarios. Conclusions drawn on collision data, which identified no accident clusters and no inherent causation factors, extends to all links in the study network including those screened for this scenario. Additionally, the completion of an RSA with no outstanding safety concerns for the newly proposed links of Cartwright Avenue and Garrod Street.

7.251 The traffic generated by Proposed Development phases introduced between 2033 and 2038 is not expected to materially impact the significance of effect on accidents and safety. Given this, the effect of the forecast change in traffic volumes on accidents and safety for all screened links is considered to be Negligible (not significant).

Public Transport Users

7.252 As outlined in the TA, bus trip distribution heat maps with existing bus routes overlaid show that all key origins and destinations expected by bus are served by existing local services, including the U1 & 2. The only key origin and destination currently not served by an existing bus route is the north-east growth area and this will be served by the Orbital route in the future.

7.253 Also as detailed with the TA, a one hour peak of 281 bus trips to/from west Cambridge plus 36 bus trips to/from south Cambridge (CBC), totalling 317 bus trips are expected to be generated from the Proposed Development. Over a three hour peak period 585 bus trips to/from west Cambridge plus 67 bus trips to/from south Cambridge, totalling 652 bus trips are expected. These key destinations are already served by the U1 & U2 and 317 hourly trips (652 over a three hour peak) would translate into between 36 - 53 trips every 10 minutes at peak times. Increasing the U1 & U2 to a 10 minute frequency, plus other existing services linking into Cambridge City and then south to CBC via the busway, will accommodate these expected Proposed Development trips by bus. Furthermore, accounting for changing working patterns, passengers are expected to ‘peak spread’ their journeys rather than focus on one peak hour.

7.254 Residential dwellings forming part of the Proposed Development will be within 400m of a bus stop and bus stops will be within 800m of each other.

7.255 The effect on public transport users is considered to be Minor Adverse (not significant).

MITIGATION, MONITORING AND RESIDUAL EFFECTS

7.256 In this chapter, construction impacts have not been assessed in isolation, as they coincide with partial development occupation during the peak construction period (2033 Interim scenario), therefore representing a reasonable worst-case scenario. Regardless, the following section outlines specific mitigation measures for construction activities independently, as these are critical to managing potential temporary impacts on traffic, safety, and amenity. Following this, development-related mitigation strategies are also outlined.

Enabling, Demolition and Construction Mitigation

7.257 Construction mitigation measures are designed to be adaptive and responsive to evolving conditions on-site. Beyond embedded mitigation related to construction outlined earlier in this ES chapter, including comprehensive suite of measures summarised from the CTMP, the following are intended to address residual effects or unforeseen impacts that may arise during construction. These will be secured by condition as part of the CTMP.

- Local residents will be consulted and informed about the construction and traffic management proposals to maintain good community relations;
- Adopt reasonable endeavours to publicise employment opportunities in local press to recruit staff locally and thereby reduce the length of journeys to work for construction staff; and
- Adopt reasonable endeavours to invite sub-contract tenders from local suppliers to reduce the length of journeys to work for construction staff.

Completed Development Mitigation

7.258 To support the Proposed Development, a range of on and off-site transport infrastructure measures are proposed. These will be secured by condition and include:

- Sustainable Community:
  - Improved wayfinding on-site;
  - On-site NMU network;
  - Phase 1 enhancements (improvements identified to the existing Phase 1 infrastructure as outlined in detail within the TA);
  - Additional on-site Voi hub locations;
  - On-site amenities and neighbourhoods to encourage internalisation through local living;
  - On-site car parking pegged to accessibility;
- Access:
  - New access from Cartwright Avenue onto Huntingdon Road that will remove traffic from Eddington Avenue;
  - Numerous new NMU points of access onto Huntingdon Road adjacent to crossing points over Huntingdon Road;
  - Update to signals timings and phasing at existing Huntingdon Road / Eddington Avenue junction to offer additional capacity;
  - Two new priority-controlled accesses off Huntingdon Road, with pedestrian footways linking onto Huntingdon Road, to directly serve the northern Proposed Development employment plots;
- Mobility Hubs:
  - High quality bus stops to be provided within 400m of homes and 800m of each other. And three on-site primary mobility hubs plus additional neighbourhood mobility hubs located throughout the Proposed Development.
- Public Transport:
  - Uplift in existing U2, 5 & 6 service plus uplift and diversion of existing U1;
- Walk and Cycle Network:
  - Bi-directional strategic and segregated cycle link along Cartwright Avenue;
  - Additional leisure active travel routes through the site;
  - Improvements for active travel to Storey's Field Playground / Ridgeway junction;
  - Improvements to Eddington Avenue / Garrod Street Crossing to incorporate cyclists;
  - Segregated walk and cycle infrastructure along Garrod Street linking the site to the east;
  - High quality cycle parking;
  - Provision of uni-directional cycle lanes along north-western end of Huntingdon Road to fill gap between Girton Road and A14 bridge to serve existing active travel users and new residents;
  - Footway provision between North-West Huntingdon Road access and A14 bridge to fill an existing active travel gap;
  - Improved PRoW between Huntingdon Road and Girton over A14 Active Travel bridge.

Residual Effects

7.259 All of the residual effects resulting from the Proposed Development are presented in Table 7.19.

Table 7.19 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
2027 Future Baseline (No Redistribution) vs 2027 Future Baseline (With Redistribution)							
Cartwright Avenue – North Cartwright Avenue – East	Severance	Minor Adverse	Not Significant	L	D	P	Lt
	NMU Delay	Minor Adverse	Not Significant	L	D	P	Lt
	NMU Amenity	Minor Adverse	Not Significant	L	D	P	Lt
	Fear & Intimidation	Minor Adverse	Not Significant	L	D	P	Lt
	Driver Delay	Minor Adverse	Not Significant	L	D	P	Lt
	Road User & Pedestrian Safety	Minor Adverse	Not Significant	L	D	P	Lt
	Public Transport Users	Minor Adverse	Not Significant	L, B, R	D	P	Lt
2033 Interim vs 2033 Future Baseline (With Redistribution)							
Garrod Street Cartwright Avenue – North	Severance	Minor Adverse	Not Significant	L	D	P	Lt
	NMU Delay	Minor Adverse	Not Significant	L	D	P	Lt
	NMU Amenity	Minor Adverse	Not Significant	L	D	P	Lt
	Fear & Intimidation	Minor Adverse	Not Significant	L	D	P	Lt
	Driver Delay	Minor Adverse	Not Significant	L	D	P	Lt
	Road User & Pedestrian Safety	Negligible	Not Significant	L	D	P	Lt
	Public Transport Users	Minor Adverse	Not Significant	L, B, R	D	P	Lt
2038 Completed Development vs 2038 Future Baseline (With Redistribution)							
Turing Way (North) Garrod Street	Severance	Minor Adverse	Not Significant	L	D	P	Lt
	NMU Delay	Minor Adverse	Not Significant	L	D	P	Lt
	NMU Amenity	Minor Adverse	Not Significant	L	D	P	Lt

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Eddington Ave (South of Garrod St) Turing Way (North of Site Access) Cartwright Avenue – North Cartwright Avenue – East	Fear & Intimidation	Minor Adverse	Not Significant	L	D	P	Lt
	Driver Delay	Minor Adverse	Not Significant	L	D	P	Lt
	Road User & Pedestrian Safety	Negligible	Not Significant	L	D	P	Lt
	Public Transport Users	Minor Adverse	Not Significant	L, B, R	D	P	Lt
2033 Interim vs 2033 Future Baseline (No Redistribution) - Sensitivity							
Garrod Street Cartwright Avenue – North Cartwright Avenue – East	Severance	Minor Adverse	Not Significant	L	D	P	Lt
	NMU Delay	Minor Adverse	Not Significant	L	D	P	Lt
	NMU Amenity	Minor Adverse	Not Significant	L	D	P	Lt
	Fear & Intimidation	Minor Adverse	Not Significant	L	D	P	Lt
	Driver Delay	Minor Adverse	Not Significant	L	D	P	Lt
	Road User & Pedestrian Safety	Negligible	Not Significant	L	D	P	Lt
	Public Transport Users	Minor Adverse	Not Significant	L, B, R	D	P	Lt
2038 Completed Development vs 2038 Future Baseline (No Redistribution) - Sensitivity							
Garrod Street Eddington Ave (South of Garrod St) Cartwright Avenue – North Cartwright Avenue – East	Severance	Minor Adverse	Not Significant	L	D	P	Lt
	NMU Delay	Minor Adverse	Not Significant	L	D	P	Lt
	NMU Amenity	Minor Adverse	Not Significant	L	D	P	Lt
	Fear & Intimidation	Minor Adverse	Not Significant	L	D	P	Lt
	Driver Delay	Minor Adverse	Not Significant	L	D	P	Lt
	Road User & Pedestrian Safety	Negligible	Not Significant	L	D	P	Lt
	Public Transport Users	Minor Adverse	Not Significant	L, B, R	D	P	Lt

Notes:
Residual Effect
- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline

7.260 In the absence of the Proposed Development, the local transport network would still evolve over time, comprising the delivery of committed development schemes and infrastructure projects as detailed in earlier in this chapter. This includes completion of the remaining Phase 1 units of the 2013 OPP and other major growth areas such as Darwin Green, West Cambourne, and Northstowe. This scenario also assumes the progression of key infrastructure investment, such as the Madingley Road walking and cycling scheme, which is expected to improve active transport connectivity between Eddington, West Cambridge, and Cambridge City Centre.

7.261 Additionally, without the Proposed Development, the new Cartwright Avenue corridor would not be delivered. In its absence, background traffic is expected to continue using existing corridors, specifically Eddington Avenue (North) and Huntingdon Road. This contrasts with the future scenario including Cartwright Avenue, where routing flexibility provides an opportunity to alleviate pressure on these corridors and lessen the impact of traffic on sensitive receptors. These future baseline scenarios (excluding redistribution) demonstrate that, on key links, the evolved baseline highlights a network facing rising cumulative demand without the mitigation opportunities provided of the Proposed Development.

Cumulative Effects Assessment

7.262 As mentioned previously, the assessment approach taken in this chapter differs from the conventional separation of 'future baseline' and 'cumulative scenario' described in the IEMA Guidelines for Environmental Assessment of Traffic and Movement. Rather than assessing a distinct cumulative case, the future baseline scenarios used throughout this chapter already incorporate committed development traffic within the study area, embedding cumulative growth into the core assessment.

7.263 As previously noted, TEMPro growth has only been applied to the M11 corridor to reflect wider background development, while all other traffic growth has been based on specific committed schemes. This avoids double counting and ensures that cumulative effects are captured directly within the future baseline scenarios presented throughout this chapter and therefore no further assessment is needed.

LIKELY SIGNIFICANT EFFECTS

7.264 Based on the comprehensive assessment presented in this ES chapter, it has been concluded that the Proposed Development is not expected to result in any significant adverse or beneficial effects on traffic and movement during any of the assessed phases (2027, 2033, and 2038).

7.265 The assessment has evaluated the potential impacts related to severance, pedestrian delay, amenity, fear and intimidation, driver delay, and accidents and safety. The evaluation has been conducted in line with industry best practice, including the use of IEMA Guidelines and professional judgement where necessary. Residual effects have been identified as Minor Adverse or Negligible across all development scenarios and timeframes, with no moderate or major impacts identified that would qualify as significant.

7.266 Even where larger increases in traffic flows were observed (e.g., on Cartwright Avenue and Garrod Street during the completed development phase), these have been determined to result in Minor Adverse effects due to the non-existent baseline traffic and/or low absolute traffic volumes, as well as the design of these key network links to accommodate forecast total traffic volumes without detriment to vulnerable road users.

Chapter 8: Air Quality

TRIUM

AIR QUALITY	
AUTHOR	AECOM Ltd
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Air Quality** Annex 1: Model Verification; Annex 2: Air Quality Legislation Policy; and Annex 3: Dust Risk Assessment.
KEY CONSIDERATIONS	Key areas which have been considered in the assessment of air quality impacts include construction dust impacts, construction traffic emissions impacts, operational traffic emission impacts, and site suitability. As a precautionary approach, an interim traffic emissions scenario has also been modelled which incorporates peak construction traffic as well as partial operational traffic based on a 2033 assessment year. The study has focused on concentrations of nitrogen dioxide and particulate matter as pollutants associated with road traffic emissions. The assessment of the operational phase of the Proposed Development has adopted the following limitations and assumptions; modelling has used traffic datasets provided by KMC Transport Consultants, background pollutant concentration data have been sourced from Defra's 2021-based background concentration maps[1]; 2023 monitoring data have been used for verification; and selected worst case receptors have been assumed, which represent the location of maximum exposure to air pollutants within an area.
CONSULTATION	An EIA Scoping Report was prepared and submitted to Greater Cambridge Shared Planning Service (GCSPS) in November 2024 (**ES Volume 3, Appendix: EIA Methodology – Annex 1**). An EIA Scoping Opinion was subsequently received on 23 January 2025 and is included within **ES Volume 3, Appendix: EIA Methodology – Annex 2**. Prior to this, discussion was held between AECOM, and officers at Cambridge City Council and South Cambridge District Council on 15 November 2024. Whilst the EIA Scoping Opinion generally agreed with the proposed approach, the GCSPS did provide additional commentary. This stated that traffic data used within the air assessment would only be approved once the methodology and approach to the assessment of transport impacts has been approved. In addition, it was requested that receptor locations are agreed with the councils. Proposed locations have been forwarded to the respective councils and Cambridge City Council (CCC) have approved those locations, however, a response has yet to be received from South Cambridgeshire District Council (SCDC). The EIA Scoping Opinion also asked that consideration of impacts both inside and outside the Air Quality Management Area (AQMA) are included. The relevant AQMA has been revoked in January 2025, however, the assessment includes areas that were previously within the AQMA in order to ensure a conservative assessment. The EIA Scoping Opinion included a request to ensure that the Greater Cambridge Sustainable Design and Construction Supplementary Planning Document (SPD) and Air Quality Strategy are considered and noted that the local plans for both local authorities are not aligned but that this is set out in the SPD. Details of these are set out within **ES Volume 3, Appendix: Air Quality – Annex 1**. The Proposed Development will use an all-electric energy strategy, with no emissions anticipated from on-site combustion plants (Combined Heat and Power (CHP) units or boilers). The final composition of non-residential elements of the Proposed Development are not defined at this stage. It is therefore not possible to determine whether there will be any requirements to provide backup power facilities or what form or scale these might take. A primary consideration will be the design of resilient power networks to minimise or avoid the requirement for further resilience through the provision of backup power. As it is not possible to identify whether backup power provision will be required, any related air quality impacts cannot be assessed at this stage. It is expected that should details of emergency backup generators become available, this will be assessed at detailed design as part of a Reserved Matters Application (RMA). The EIA Scoping Opinion identified that GCSPS requirements for Electric Vehicle Car Parking (EVCP) are higher than building regulations and also that limitations regarding grid capacity should be considered at an early stage. These elements are not responded to directly within this ES chapter as whilst they influence air quality, they are more properly considered within other topics such as transport and utilities, for further detail please refer to **ES Volume 1, Chapter 7: Traffic and Movement** and the Transport Assessment (TA) submitted with the planning application .

ASSESSMENT METHODOLOGY

Basis of Assessment

8.1 This chapter of the Environmental Statement (ES) presents an assessment of the likely significant environmental effects of the Proposed Development in relation to air quality. The assessment considers potential impacts arising during the enabling, demolition, construction, and operation of the Proposed Development. Where relevant, additional mitigation measures have been identified where adverse effects have been concluded.

8.2 In order to ensure that an appropriately conservative assessment is carried out, despite the outline nature of the application, a number of assumptions have been made:

- The construction dust assessment has been carried out assuming that all dust emitting activities will be carried out at the boundary of the site and will therefore be at the closest distance to sensitive receptors. In addition, as the Proposed Development will be phased, early phase receptors have been included in the assessment of construction dust impacts as sensitive receptors, and it has been assumed that large numbers of sensitive receptors be present at the boundary throughout the works. Whilst the extent of the worst-case assumption is not realistic as not all of the receptors will be in place, it forms part of a worst case assessment in lieu of more detailed plans;
- Air quality impacts within the site have been assessed using Parameter Plans and assuming that sensitive receptors are at the closest potential location to any emissions source (such as local roads);
- Off-site air quality impacts have been assessed using appropriately conservative traffic data. Due to the extent of the phasing, an additional interim assessment scenario has been incorporated into the assessment, in addition to those proposed at scoping. The modelled scenarios therefore comprise:
  - Baseline (2023)[2]
  - With/Without Construction Traffic Assessment (2027)
  - With/Without Peak Construction and Partial Operational "Interim" Assessment (2033)
  - With/Without Complete and Operational Traffic Assessment (2038)

8.3 The potential effect of the Proposed Development on local air quality has been assessed with regard to the following national and local guidance documents, further details of which are set out in **ES Volume 3, Appendix: Air Quality – Annex 2:**

- Clean Air Strategy (2019)[3];
- Air Quality Standards Regulations (as amended) (2016)[4];
- National Planning Policy Framework, Planning Practice Guidance (2024)[5];
- Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) Guidance on Land-Use Planning and Development control: Planning for air quality (2017)[6];
- Defra Local Air Quality Management (LAQM) Technical Guidance TG.22 (2022)[7];
- IAQM Guidance on the Assessment of Dust from Demolition and Construction (2024)[8];
- Greater Cambridge Sustainable Design and Construction SPD[9]; and

[1] *Department For Environment, Food & Rural Affairs, 2021-based Background Maps, 2021. Available at: https://uk-air.defra.gov.uk/data/laqm-background-home*
[2] *2023 is the most recent year for which air quality monitoring data are available with which to verify the model and is therefore the baseline year. Traffic data for 2024 have been provided by the project transport consultant who have stated that it is appropriate to use this data to represent 2023.*
[3] *HM Government, 2019. Clean Air Strategy. Available at: https://www.gov.uk/government/publications/clean-air-strategy-2019*
[4] *HM Government, 2010. The Air Quality Standards Regulations. Available at: https://www.legislation.gov.uk/uksi/2010/1001/contents*
[5] *HM Government, 2025. National Planning Policy Framework. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2*
[6] *Institute of Air Quality Management & Environmental Protection UK, 2017. Land-Use Planning & Development Control: Planning For Air Quality. Available at: https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf*
[7] *Department For Environment, Food & Rural Affairs, 2022. Local Air Quality Management Technical Guidance 2022. Available at: https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf*
[8] *Institute of Air Quality Management, 2024. Guidance on the assessment of dust from demolition and construction. Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf*
[9] *Cambridge City Council, Great Cambridge Sustainable Design and Construction SPD, 2020. Available at: https://www.cambridge.gov.uk/media/8157/greater-cambridge-sustainable-design-and-construction-spd.pdf*

- Greater Cambridge Air Quality Strategy[10]

8.4 The assessment includes:

- Review of baseline air quality conditions in the vicinity of the Proposed Development;
- Qualitative enabling, demolition and construction dust risk assessment;
- Quantitative modelling of construction phase road traffic impacts at sensitive receptors for nitrogen dioxide (NO_2) and particulates (PM_{10} and $PM_{2.5}$) in 2027;
- Quantitative modelling of interim phase road traffic impacts at sensitive receptors for nitrogen dioxide (NO_2) and particulates (PM_{10} and $PM_{2.5}$) in 2033;
- Quantitative modelling of predicted operational impacts (road traffic) at sensitive receptors for nitrogen dioxide (NO_2) and particulates (PM_{10} and $PM_{2.5}$) for the opening year of 2038;
- Site suitability assessment.

8.5 The study area for the assessment is defined by the criteria for receptor selection, 250m from the site boundary for construction phase impacts and 200m from affected road links for traffic emissions impact assessment. For resulting receptor locations reference should be made to Figure 8.3. Affected roads links are generally those where the change in traffic exceeds the EPUK and IAQM (2017) screening criteria as set out in further detail below.

Defining the Baseline

8.6 The following sources of information have been reviewed and form the basis of the baseline assessment:

- Review of relevant legislation and planning policy;
- Analysis of the air quality monitoring survey carried out by Cambridge City Council[11] (CCC) and South Cambridge District Council[12] (SCDC) (ongoing automatic and passive NO_2 monitoring);
- Review of Defra Air Quality Background Concentration Maps[13]; and
- Review of modelled existing baseline pollutant concentrations at existing sensitive receptors using the Atmospheric Dispersion Modelling System (ADMS)-Roads model developed by Cambridge Environmental Research Consultants Ltd (CERC).

Future Baseline

8.7 Defra publishes maps of background pollutant concentrations for each 1km x 1km grid square covering the whole of the UK. The most recent release of the background maps uses 2021 baseline data as the reference year, and provides projections of background concentrations of NO_2, PM_{10} and $PM_{2.5}$ from 2021 to 2040[13]. In addition, traffic emissions data are provided by Defra for NO_2, PM_{10} and $PM_{2.5}$ from 2021 to 2050 within the EFT (Emissions Factor Toolkit) v13.1[14]. Future baseline conditions have been modelled using Defra background mapping[13] and Defra's EFT for 2027 (earliest construction year), 2033 (interim assessment) and 2038 (operational assessment), explained in detail within '*Impact Assessment Methodology';* as part of the ADMS roads dispersion modelling assessment, which includes consideration of all cumulative schemes within the future baseline.

Evolution of the Baseline

8.8 If the Proposed Development does not come forward, it is expected that the site would remain in its current state. Air quality is generally expected to improve with time, due for example, to more stringent emissions standards for motor vehicles. The likely evolution of the baseline conditions if the Proposed Development did not come forward has been considered in this assessment, and is hereafter referred to as 'Without Completed Operational Traffic 2038'. Baseline conditions in the absence of the Proposed Development, but allowing for natural evolution and the inclusion of all cumulative schemes in the surrounding area,

Impact Assessment Methodology

Enabling, Demolition and Construction

8.9 Potential affects during the enabling, demolition and construction phase can relate to:

- Dust from Construction Activities (Demolition, Earthworks, Construction and Trackout);
- Non-Road Mobile Machinery; and
- Construction Traffic.

Dust Generated During the Construction Phase

8.10 Fugitive emissions (emissions which are not associated with a single fixed release point) of airborne particulate matter are readily produced through the action of abrasive forces on materials and, therefore, a wide range of demolition and construction activities have the potential to generate this type of emission.

8.11 Particulate matter in air is made up of particulates of a variety of sizes, and the concept of a 'size fraction' is used to describe particulates with sizes in a defined range. These definitions are based on the collection efficiency of specific sampling methods and each of the size fractions is especially associated with different types of impacts. In this assessment, the term 'dust' is used to mean particulate matter in the size fraction 1 µm (micrometres) to 75 µm in diameter, as defined in BS 6069:1994[15]. The size fraction called 'PM_{10}' is composed of material with an aerodynamic diameter of less than 10 µm and overlaps with the size fraction for dust.

8.12 Air quality objectives for PM_{10} have been set for the protection of human health and the term PM_{10} is only used in this assessment when referring to the potential impact of emissions of particulate matter from demolition and construction activities on human health receptors. The short-term, 24-hour mean objective for airborne concentrations of PM_{10} is the appropriate Air Quality Strategy Objective for assessing the potential impact on health of short-term fugitive emissions from demolition and construction sites.

8.13 Dust impacts are considered in terms of the change in airborne concentration and the change in the rate of deposition of dust onto surfaces. The IAQM adopts a broad definition of dust that includes the potential for changes in airborne concentration, changes in deposition rates and the risk to human health and public amenity when considering the significance of effects from emissions of fugitive particulate matter.

8.14 The nature of the impact varies between different types of receptors. In general, receptors associated with higher baseline dust deposition rates are less sensitive to dust soiling impacts, such as farms, light and heavy industry or outdoor storage facilities. In comparison some hi-technology industries or food processing plants operate under clean air conditions and increased airborne particulate matter concentrations may have an increased economic cost associated with the extraction of more material by plant air filtration units. For human health impacts associated with construction dust, receptors with higher baseline PM_{10} concentrations are

[10] *Cambridge City Council, Greater Cambridge Air Quality Strategy 2024-2029. Available at: https://www.cambridge.gov.uk/media/i3eh0kvd/greater-cambridge-air-quality-strategy-2024.pdf*
[11] *Cambridge City Council, 2024. Annual Status Report 2024. Available at: https://www.cambridge.gov.uk/air-quality*
[12] *South Cambridgeshire District Council, 2024. Annua Status Report 2024. Available at: https://www.scambs.gov.uk/environment/pollution/air-pollution/local-air-quality-management/*
[13] *Department For Environment, Food & Rural Affairs, 2021-based Background Maps, 2021. Available at: https://uk-air.defra.gov.uk/data/laqm-background-home*
[14] *Department for Environment, Food & Rural Affairs, 2025. Emissions Factors Toolkit v13.1. Available at: https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/*
[15] *British Standards Institute (BSI), (1994). BSI, BS6069 (Part 2) (1994), Characterization of Air Quality – Glossary*

generally considered to have a higher sensitivity due to the combined impacts of existing and construction related PM_{10}.

8.15 As such, a Dust Risk Assessment, in line with the IAQM guidance[8] has been carried out and is set out in **ES Volume 3, Appendix: Air Quality – Annex 3**. The types of receptors that are sensitive to this impact, and as such have been considered in this assessment, include residential properties, schools, nurseries, hospital and care homes. The following paragraphs relate to the relevant parts of the IAQM guidance.

8.16 Activities on construction sites with the potential to generate dust and emissions can be categorised into four types of activities, which are:

- Demolition – any activities associated with the removal of existing structures on site;
- Earthworks – includes the processes of soil-stripping, ground-levelling, excavation and landscaping;
- Construction – any activities relating to the provision of new structures on site; and
- Trackout – the transport of dust and dirt from the construction site onto the public road network where it may be deposited and re-suspended by traffic using the network.

8.17 The potential for dust emissions has been assessed for each activity that is likely to take place. The guidance has been used to assess the dust emission magnitude and risk of dust effects associated with the construction phase and to identify appropriate mitigation measures to be adopted to reduce any potential impacts so that they are not significant.

8.18 Assessment is required where a sensitive human receptor is located within 250m from the site boundary and/or within 50m of the route(s) used by vehicles on the public highway, up to 250m from the site entrance(s). In addition, an assessment is required where a sensitive ecological receptor is located within 50m of the site boundary and/or 50m of the route(s) used by vehicles on the public highway, up to 250m from the site entrance(s).

8.19 The first step of the assessment is to assess the risk of dust effects. This is undertaken separately for each of the four activities (demolition, earthworks, construction and trackout) and takes account of:

- The scale and nature of the works, which determines the potential dust emission magnitude; and
- The sensitivity of the area.

8.20 These factors are combined following criteria set out in the IAQM dust guidance to give an estimate of the risk of dust effects occurring.

8.21 Site-specific mitigation for each of the four potential activities is then determined based on the risk of dust effects identified. These measures are either 'highly recommended', 'desirable' or 'not required', depending on the level of risk identified. For general mitigation measures, the highest risk category should be applied. For example, if the site is medium risk for earthworks and construction, but a high risk for demolition and track-out, the general measures applicable to a high-risk site should be applied.

8.22 Professional judgment is employed to examine the residual dust effects assuming mitigation is undertaken to determine significance. It is expected that best practice mitigation measures will be documented within a Dust Management Plan (DMP) (or equivalent to form part of the Construction Environmental Management Plan (CEMP)) and agreed with SCDC and CCC prior to the commencement of construction works and secured by an appropriately worded planning condition. With effective mitigation and management commensurate with the level of risk identified in the construction dust assessment, the residual dust effects during demolition and construction works are generally considered to be 'not significant'.

Dust Assessment Receptors

8.23 For the assessment of construction dust emissions, a construction dust receptor is defined simply as a location that may be affected by dust emissions. Human receptors include locations where people spend time and where property may be impacted by dust. Ecological receptors are habitats that might be sensitive to dust.

8.24 When assessing the impact of dust emissions generated during construction works, the methodology requires only the quantities of the nearest, highest sensitivity receptors to the boundary of the site in each direction be considered. These receptors have the potential to experience impacts of greater magnitude, when compared with other more distant receptors, or less sensitive receptors. Moreover, receptors located within 50m of routes to be used by construction vehicles might be impacted by dust originating from the track-out of material onto the road, and as such have been considered in this assessment.

8.25 The number of receptors within each sensitivity class, as defined in Table 8.1, within specified distances of the site has been estimated, in order to determine the overall sensitivity of the area as per the prescribed methodology[8].

Table 8.1 Construction Dust Receptor Sensitivities

Site ID	High sensitivity	Medium sensitivity	Low Sensitivity
Human perception of dust soiling effects	Enjoy a high level of amenity; appearance / aesthetics / value of property would be diminished by soiling; receptor expected to be present continuously / regularly; e.g. residential / museums / car show rooms / commercial horticulture	Enjoy a reasonable level of amenity; appearance / aesthetics / value of property could be diminished by soiling; receptor not expected to be present continuously / regularly; e.g. parks / places of work	Enjoyment of amenity not reasonably expected; appearance / aesthetics / value of property not diminished by soiling; receptors are transient / present for limited period of time; e.g. playing fields, farmland, footpaths, short term car parks* & roads *subject to typical usage, could be high sensitivity
PM_{10} health effects	Public present for 8-hours per day or more, e.g. residential, schools, car homes	Only workforce present (no residential or high sensitivity receptors) 8-hours per day or more	Transient human exposure, e.g. footpaths, playing fields, parks
Ecological dust deposition effects	International / national designation & the designated feature is sensitive to dust soiling effects, e.g. SAC[16] for acid heathlands, or lichens, vascular species on Red Data List (JNCC[17])	Important plant species - unknown sensitivity to dust soiling; national designation which may be sensitive,	Local designation where feature may be sensitive to dust soiling,

Emissions from Construction Phase Non-Road Mobile Machinery (NRMM)

8.26 IAQM dust guidance states that experience of assessing the exhaust emissions from on-site plant (NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, therefore in the vast majority of cases they will not need to be quantitatively assessed.

8.27 Emissions from NRMM will be temporary and localised and will be controlled via the application of the NRMM standards and through best-practice mitigation measures. For these reasons, construction phase NRMM emissions should not be significant and, therefore, these emissions are not required to be considered any further in the assessment.

Construction Traffic

8.28 The construction phase of the Proposed Development will lead to an increase in the number of vehicles on the local highway network for the duration of the construction works. Therefore, dispersion modelling of the routes taken by the construction traffic has been undertaken. Exhaust emissions from road vehicles may affect the concentrations of the principal pollutants of concern (NO_2, PM_{10} and $PM_{2.5}$), at sensitive receptors in the vicinity of the Proposed Development. Therefore, these pollutants are the focus of the assessment of the construction-phase road traffic impacts.

[16] *SAC – Special Areas of Conservation*

[17] *JNCC – Joint Nature Reserve Committee*

8.29 The IAQM and EPUK Guidance on Land-Use Planning and Development Control[6] states that an air quality assessment is required if the development will *"cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors"*. The indicative criteria to proceed with an assessment is:

"A change of HDV flows of:

- *more than 25 annual average daily traffic (AADT) flows within or adjacent to an Air Quality Management Area (AQMA); or*
- *more than 100 AADT elsewhere."*

8.30 Alternatively, the guidance states that an air quality assessment is also required if the development will *"cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors"*. The indicative criteria to proceed with an assessment is:

8.31 *"A change of LDV flows of:*

- *more than 100 AADT within or adjacent to an AQMA; or*
- *more than 500 AADT elsewhere."*

8.32 Traffic data supplied by the project team's transport consultants, KMC Transport Consultants, indicates that the construction phase will generate increased LDV movements of up to 52 daily movements on the local road network, which is below the thresholds. However, HDV movements of up to 132 daily movements are predicted to be generated during construction which in excess of the threshold outlined above.

8.33 Whilst the peak construction traffic is predicted to occur in 2033, construction is expected to commence in 2027 when per vehicle emissions and background concentrations are higher. Therefore, as a precautionary approach, emissions and background concentrations for 2027 have been used in conjunction with peak year construction traffic and baseline (2027) traffic flows excluding redistribution relating to Cartwright Avenue as this is not expected to be in place in 2027. This is further explained in **ES Volume 1, Chapter 7: Traffic and Movement**.

8.34 The Proposed Development is located in close proximity to a previously designated AQMA, but this was revoked by CCC in early 2025. As a conservative measure, the criteria above have been applied as though the AQMA were still in place, and detailed dispersion modelling has been undertaken.

8.35 As with baseline modelling, the modelling of the construction scenario road traffic emissions uses the dispersion model software 'ADMS-Roads' (version 5.0.1.3) to quantify pollution levels at selected receptors due to road traffic emissions.

8.36 Model outputs are presented at individual, selected worst case receptor locations.

Phasing

8.37 The Proposed Development will be constructed and occupied in phases, as detailed in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**.

8.38 The demolition and construction dust assessment has considered the impacts that demolition and construction work would have on existing nearby properties, as well as the impacts of construction works on completed and occupied buildings from earlier phases within the site throughout the construction phase.

8.39 In addition to the above construction phase, an interim phase traffic scenario, based on 2033, has been considered which includes peak construction traffic as well as partial operation of the Proposed Development. This scenario results in a maximum traffic generation of 2,094 additional LDVs on Cartwright Avenue (which is a new publicly available route to be opened as part of the Proposed Development), 487 LDV flows outside the development itself and a maximum of 132 HDV flows.

8.40 This is above the identified screening criteria and therefore modelling has been carried out for the interim scenario. The assessment uses the dispersion modelling software 'ADMS-Roads' (version 5.0.1.3) to quantify pollution levels at selected receptors due to interim scenario road traffic emissions. The methodology follows that described in detail for the operational phase below.

8.41 New receptors introduced by the Proposed Development are included as appropriate in all parts of the assessment. As Cartwright Avenue is expected to be open by 2033, some traffic redistribution is included within the traffic data for the interim scenario, however, the 2033 baseline scenario assumes that no part of the Proposed Development goes forward and therefore that Cartwright Avenue is not in place.

Completed Development

Operational Traffic

8.42 At high temperatures and pressures found within vehicle engines, some of the nitrogen in air and fuel is oxidised to form NOx (generic term for the mono-nitrogen oxides, nitric oxide (NO) and NO_2, mainly in the form of nitric oxide (NO), which is then converted to NO_2 in the atmosphere. The presence of NO_2 concentrations in the atmosphere is associated with adverse effects on human health. Vehicle emissions can also result in the exposure to concentrations of PM_{10} and $PM_{2.5}$ at sensitive receptors. Concentrations of NO_2, PM_{10} and $PM_{2.5}$ have therefore been considered in the assessment of changes in road traffic associated with the Proposed Development.

8.43 This assessment follows current guidance for the determination of pollutant concentrations and uses emissions factors for road traffic calculated with the latest information as provided in the latest version of Defra's EFT (Version 13.1)[14].

8.44 The IAQM and EPUK Guidance on Land-Use Planning and Development Control[6] states that an air quality assessment is required if the development will *"cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors"*. The indicative criteria to proceed with an assessment is:

"A change of LDV flows of:

- *more than 100 AADT within or adjacent to an AQMA; or*
- *more than 500 AADT elsewhere."*

8.45 Alternatively, the guidance states that an air quality assessment is also required if the development will *"cause a significant change in Heavy Duty Vehicle (HDV) traffic flows on local roads with relevant receptors"*. The indicative criteria to proceed with an assessment is:

"A change of HDV flows of:

- *more than 25 AADT within or adjacent to an AQMA; or*
- *more than 100 AADT elsewhere."*

8.46 Traffic data supplied by the project team's transport consultants, KMC Transport Consultants, indicates that the operational phase will additionally generate increased LDV movements of up to 2,949 AADT on Cartwright Avenue and 2,583 AADT outside the Proposed Development. In addition, it is predicted to generate a maximum of 34 AADT HDV. The Proposed Development is located to a previously designated AQMA, but this was revoked by CCC in early 2025. As a conservative measure, the AQMA criterion above has been applied, and detailed dispersion modelling has been undertaken.

8.47 As with the construction phase and interim phase road traffic assessments, the assessment of operational road traffic emissions uses the dispersion model software 'ADMS-Roads' (version 5.0.1.3) to quantify pollution levels at selected receptors due to road traffic emissions.

8.48 Operational model outputs have been presented at individual receptor locations.

Dispersion Modelling Methodology

Dispersion Model Input Data and Model Conditions

8.49 Details of general model conditions set up in ADMS-Roads are provided in Table 8.2. This set up is consistent between construction (2027), interim year (2033) and operational phase (2038) modelling scenarios.

Table 8.2 Dispersion Model Inputs

Variables	ADMS-Roads Model Input
Surface roughness at source	0.5m
Surface roughness at meteorological site	0.2m
Minimum Monin-Obukhov length for stable conditions at source	30m
Minimum Monin-Obukhov length for stable conditions at meteorological site	10m
Terrain types	Flat
Receptor location	x, y coordinates determined by GIS, z = various.
Emissions	NO_x, PM_{10}, $PM_{2.5}$
Emission factors	EFT Version 13.1 emission factor dataset[14]
Meteorological data	1 year (2023) hourly sequential data from Mildenhall meteorological station[18]
Emission profiles	N/A
Receptors	Facades of selected receptors only.
Model output	Long-term (annual) mean NO_x, PM_{10} and $PM_{2.5}$ concentrations.

Background Pollutant Concentrations

8.50 Background pollution concentrations used in this assessment were sourced from Defra's 2021-based background maps as these are the most recently published. The data used in this assessment are presented in Table 8.8.

Traffic Data

8.51 AADT flows have been provided by KMC Transport Consultants:

- 2023 Existing Baseline[19];
- 2027 Future Baseline;
- 2033 Future Baseline;
- 2038 Future Baseline;
- 2027 With Construction;
- 2033 With Peak Construction and Partial Occupation Interim Year and;
- 2038 Complete and Occupied Operational Year.

8.52 The baseline year has been chosen as the most recent year for which monitoring data are available with which to verify the model as 2024 data have not yet been published. Due to the phased nature of the Proposed Development, first occupation will occur whilst construction activities are still ongoing until full opening. The 'Interim' scenario has therefore considered a cumulative worst-case scenario in which the trip generation anticipated from Phase 1 of the 2013 OPP of the Proposed Development is considered in addition to that from peak construction and these have been modelled simultaneously.

Model Verification

8.53 Model verification is the process by which the performance of the model is assessed to identify any discrepancies between modelled and measured concentrations at air quality monitoring sites within the study area.

8.54 The predicted results from a dispersion model may differ from measured concentrations for a large number of reasons, including uncertainties associated with traffic flows and emissions factors, errors with the monitoring data itself and limitations inherent to the modelling software. In light of this, and in accordance with advice in LAQM.TG(22)[7], for roads-based air quality assessments it is best-practice to perform a comparison of modelled results with local monitoring data to minimise these modelling uncertainties. This provides a verification factor, by which the output of the ADMS-Roads model is adjusted, to gain greater confidence in the final results.

8.55 Model verification has been undertaken following the methodology described in Defra's technical guidance (Chapter 7 of LAQM.TG(22)). This verification process is supported by Defra's NO_X - NO_2 conversion tool[20] to convert modelled NO_X from the road to NO_2 by taking into account the background concentrations.

Meteorology Data

8.56 One year (2023) of hourly sequential observation data from Mildenhall Meteorological Station[18] has been used in the detailed modelling assessments to correspond with the baseline year. The station is located approximately 30km northeast of the site and experiences meteorological conditions that are representative of those experienced within the air quality study area. Cambridge Meteorological Station could not be used as it had approximately 73% missing data for the year.

8.57 It is recommended in LAQM.TG(22) that the meteorological data log file is checked, to confirm the number of missing and calm hours that cannot therefore be modelled. The meteorological data should only be used if the percentage of usable hours is greater than 75%, and preferably 90%. 2023 meteorological data from Mildenhall Meteorological Station includes 8,506 lines of usable hourly data out of the total 8,760 for the year, i.e. 97.1% usable data.

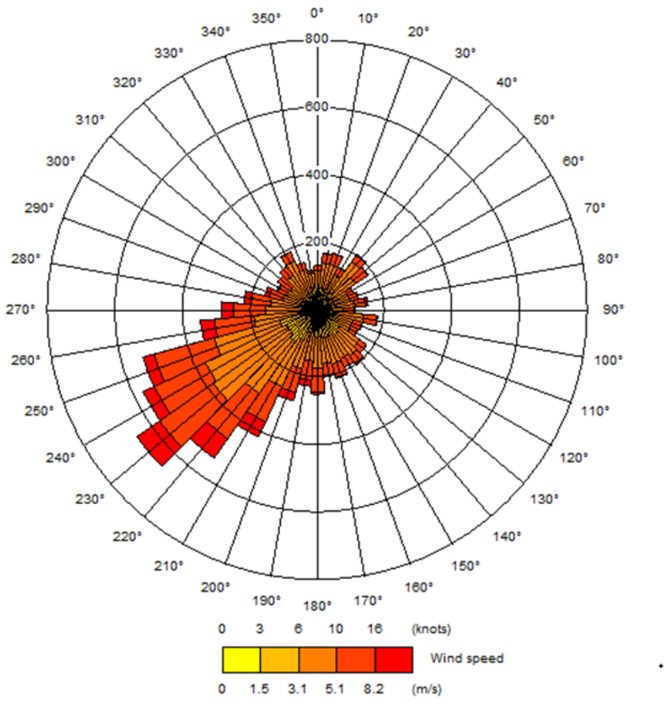
8.58 A wind rose for the site is presented in Figure 8.1.

[18] The nearest and most appropriate meteorological station to the study area is Cambridge, however, there was very little data collected at this site during 2023 and therefore Mildenhall which is the next most appropriate station has been used.

[19] KMC Transport Consultants stated that they do not anticipate traffic to be different between 2023 and 2024, so 2024 traffic data has been used. However, 2023 emissions, 2023 meteorology data and 2023 local monitoring will be used in the model and for model verification, as 2024 data has not been published by CCC or SCDC.

[20] Department for Environment, Food and Rural Affairs (2020). NOx to NO_2 Calculator v8.1.

Figure 8.1 Wind Rose for Mildenhall Meteorological Data 2023



Transport Emissions Assessment Receptors

8.59 Receptors have been selected to represent locations where people are likely to be present as the assessment is most concerned with human health.

8.60 The national air quality objective values for pollutants have been set at concentrations that provide protection to all members of society, including more vulnerable groups such as the very young, elderly or unwell. As such the sensitivity of receptors was accounted for in the definition of the air quality objective values and therefore all receptors that represent exposure of the public are of equal sensitivity as any member of the public could be present at those locations.

8.61 Receptors to be considered against the annual mean objective include locations where members of the public may be present in areas affected by regular exposure. This includes building facades of residential properties, schools, hospitals, care homes, etc. Receptors to be considered against the short-term objective include locations where members of the public may be present in areas where the annual mean objective applies, but also areas with less regular exposure, such as any outdoor locations where the public might reasonably be expected to spend one hour or longer.

8.62 Each discrete existing receptor selected for inclusion to the modelling assessment represents the maximum level of exposure that could be experienced by other receptors in their vicinity and is therefore considered sufficiently representative of them. As such the sensitivity of receptors was considered in the definition of the air quality objective values, and therefore, no additional subdivision of human health receptors on the basis of building or location type is necessary.

8.63 For the construction, interim and operational phase assessments, the potential impacts from road traffic emissions have been quantified at 36 existing representative receptor locations (provided in Table 8.9) in the vicinity of the application site and local highway network, where there is the potential for a change in road traffic flows (the primary influence of air pollution within the study area).

8.64 The Proposed Development will provide new residential and non-residential floorspace and will therefore introduce new sensitive receptors. Due to the phased nature of the Proposed Development, first occupation will occur whilst construction activities are still ongoing. Therefore, receptors introduced as a result of the Proposed Development have been considered in the detailed modelling of the interim and operational phases.

8.65 A number of receptors have been modelled at varying heights to account for the numerous floors on which residences are located. Where multiple heights have not been modelled for existing receptors, the lowest floor of exposure has been assessed.

8.66 A full list of modelled sensitive receptors has been presented in Table 8.9 and Table 8.10. The locations of these receptors relative to the Proposed Development are depicted in Figure 8.3.

Emissions from Energy Generation

8.67 The Proposed Development is proposed to use an all-electric energy strategy, and, on this basis, there will be no emissions from on-site combustion plant, i.e. Combined Heat and Power (CHP) units or boilers.

8.68 The Proposed Development may include back-up power facilitates for non-residential elements, which would operate only under emergency situations and for routine testing. The technical details of the generators, including their locations, will be submitted to the SCDC and CCC as part of any Reserved Matters Application (RMA) for the Proposed Development. The flues serving any generators will be designed based on best practice, such that the flues will be located to ensure adequate dispersion of any emissions from the flue/s to prevent significant air quality impacts. On this basis, the assessment of impacts from the back up power facilities/generators are not considered further with the air quality assessment. It is considered the SCDC and CCC will provide a suitably worded planning condition requesting further assessment on the impact of the backup generators on local air quality as part of any Reserved Matters Application as relevant.

Assumptions and Limitations

8.69 The assessment of the potential impacts associated with traffic emissions related to the Proposed Development has taken into account the following limitations and assumptions:

- Modelling has used traffic datasets provided by KMC Transport Consultants;
- Background pollutant concentration data have been sourced from Defra's 2021-based background concentration maps[13];
- 2023 monitoring and 2024 traffic data have been used for verification[2]; and
- Worst case receptors have been assumed, which represent the location of maximum exposure to air pollutants within an area.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

8.70 Sensitive receptors have been identified from a review of aerial photography and OS mapping. A set of receptors have been selected from those identified to represent worst case exposure. Committed developments anticipated to be within the air quality study area during the construction, interim or operational phases have been explicitly considered.

8.71 For the assessment of dust impacts during the construction phase, via the Dust Risk Assessment, sensitive receptors are considered in line with IAQM (2024) guidance[8]. Human and ecological receptors are considered within 250m site entrances, and 50m of the routes used by construction vehicles. Human receptors located within 250m of the boundary are considered as are ecological receptors within 50m of the boundary.

8.72 For the assessment of the traffic emissions impacts, worst case sensitive receptors are identified close to the affected road links. Affected road links are generally those where the change in traffic exceeds the EPUK and

IAQM (2017)[6] screening criteria as set out in detail above. Locations are considered where members of the public experience regular exposure to the modelled pollutants, e.g. residences and schools. Statutory ecological designations within the vicinity of the site have also been considered.

8.73 As the Proposed Development is phased, new receptors will be introduced prior to the completion of the construction phase. These proposed receptors will be considered within the dust risk assessment and road traffic modelling assessments.

8.74 Within this ES chapter, all receptors where the air quality objectives apply are considered to be of high sensitivity. Locations where the objectives do not apply must be considered not to be sensitive, therefore there are no medium or low sensitivity receptors within the context of this assessment.

Magnitude of Impact

Demolition and Construction Phase Dust Risk Assessment

8.75 The construction phase dust risk assessment has been carried out following the IAQM dust guidance and, as such does not use a magnitude of change approach, but rather a risk-based approach, as described in the '*Impact Assessment Methodology - Enabling, Demolition and Construction'* section of this chapter.

Construction and Operational Phase Detailed Modelling

8.76 The potential change in pollutant concentrations relative to the baseline concentrations attributable to road traffic emissions has been described at receptors that are representative of exposure to impacts on local air quality within the study area. The assessment also presents the total concentration of the assessed pollutants in order to identify the risk of the air quality objective values being exceeded.

8.77 For consideration of a change in annual mean concentrations of a given magnitude, the EPUK and IAQM have published recommendations for describing the impact of such change at individual receptors, as set out in Table 8.3 and Table 8.4 for long-term average concentrations of all modelled pollutants. Moderate and Substantial impacts are deemed to be significant impacts (coloured grey), negligible and slight are deemed to be not significant.

Table 8.3 Impact Descriptors at Individual Receptors – NO_2 and PM_{10}

Long Term Average Concentration at Receptor in Assessment Year (µg/m³)	Change In Concentration Relative to Air Quality Assessment Level (AQAL) (µg/m³)				
	<0.2 (Imperceptible)	>0.2 - <0.6	>0.6-<2.2	>2.2 - <4.0	>4.0
<30.2	Negligible	Negligible	Negligible	Slight	Moderate
30.2 - <37.8	Negligible	Negligible	Slight	Moderate	Moderate
37.8 - <41.0	Negligible	Slight	Moderate	Moderate	Substantial
41.0 - <43.8	Negligible	Moderate	Moderate	Substantial	Substantial
≥43.8	Negligible	Moderate	Substantial	Substantial	Substantial

Table 8.4 Impact Descriptors at Individual Receptors – $PM_{2.5}$

Long Term Average Concentration at Receptor in Assessment Year (µg/m³)	Change In Concentration Relative to Air Quality Assessment Level (AQAL) (µg/m³)				
	<0.1 (Imperceptible)	>0.1 - <0.3	>0.3-<1.1	>1.1 - <2.0	>2.0
<15.1	Negligible	Negligible	Negligible	Slight	Moderate
15.1 - <18.9	Negligible	Negligible	Slight	Moderate	Moderate
18.9 - <20.5	Negligible	Slight	Moderate	Moderate	Substantial
20.5 - <21.9	Negligible	Moderate	Moderate	Substantial	Substantial
>=21.9	Negligible	Moderate	Substantial	Substantial	Substantial

Defining the Effect

8.78 The EPUK / IAQM guidance includes seven explanatory notes to accompany the terminology for the impact descriptors. In particular, it is noted that the descriptors are for individual receptors only and that overall significance is determined using professional judgement. Additionally, it is noted that it is unwise to ascribe too much accuracy to incremental changes or background concentrations, and this is especially important when total concentrations are close to the objective value. For a given year in the future, it is impossible to define the new total concentration without recognising the inherent uncertainty, which is why there is a category that has a range around the objective value, rather than being exactly equal to it.

8.79 A change in predicted annual mean concentrations of NO_2 or PM_{10} of less than 0.5% (0.2 µg/m³) is considered to be negligible. A change that is negligible, given normal bounds of variation, would not be capable of having a direct effect on local air quality that could be considered to be significant.

8.80 A change in predicted annual mean concentrations of $PM_{2.5}$ of less than 0.5% (0.1 µg/m³) is considered to be negligible. A change that is negligible, given normal bounds of variation, would not be capable of having a direct effect on local air quality that could be considered to be significant.

8.81 A change in predicted annual mean concentrations of 1% or more of a relevant air quality objective has the potential to result in slight to moderate air quality effects at individual receptors. It is highly unlikely that significant air quality impacts could occur with the Proposed Development for changes in concentrations of 1%, particularly if these are only at a smaller number of receptors..

8.82 At changes between 2% and 5% of relevant air quality objectives, there is the potential for slight to significance effects. For annual average nitrogen dioxide concentrations, this relates to changes in concentrations ranging from 0.6 – 2.1 µg/m³. In practice, changes in concentration of this magnitude, and in particular changes at the lower end of this band are likely to be very difficult to distinguish through any post operational monitoring regime due to the number of sources of NO_2 in an urban environment and the inter annual effects of varying meteorological conditions. Therefore, in the overall evaluation of significance the potential for significant air quality impacts within this band will be considered in this context.

8.83 Changes in concentration of more than 5% are considered to be of a magnitude that is far more likely to be discernible and as such carry additional weight within the overall evaluation of significance for air quality.

8.84 All relevant receptors that have been selected to represent locations where people are likely to be present are based on impacts on human health. The air quality objective values have been set at concentrations that provide protection to all members of society, including more vulnerable groups such as the very young, elderly or unwell. As such the sensitivity of receptors was considered in the definition of the air quality objective values and therefore no additional subdivision of human health receptors on the basis of building or location type is necessary.

8.85 The EPUK/IAQM guidance uses the terms Negligible, Slight, Moderate and Substantial to describe impacts at individual receptors. These terms can be considered to be equivalent to the terms Negligible, Minor, Moderate and Major used in the wider ES.

8.86 Changes which result in a reduction in concentrations of pollutants are deemed to be beneficial and increases are deemed to be adverse. Negligible impacts are considered to be neutral as whilst there may be a numerical change, the scale and uncertainty will be such that it cannot be classified as such.

8.87 The geographical extent of air quality impacts relate to the scale of the area likely to experience an impact and will generally include 'Site' and/or 'Local' impacts. This is due to the rapid dispersion of emissions as well as the dispersion of additional traffic onto the wider road network.

8.88 Due to the nature of air quality impacts which disperse quickly and the projected improvements to vehicle emissions over time, temporally, impacts are restricted to short (up to 5 years) and medium (5 to 15 years) term.

Categorising Likely Significant Effects

8.89 The IAQM and EPUK/IAQM guidance specifies that the overall significance of the reported likely effects is considered for the Proposed Development in overall terms, based on professional judgement. For construction dust impacts, the guidance identifies the mitigation that will be required in order to render the impact not significant. Therefore, as long as the recommended mitigation is enacted, construction dust impacts will be not significant.

8.90 In terms of the vehicle emissions element of the assessment, the EPUK/IAQM guidance states that the determination of significance should be based on professional judgement and take into account the potential for the Proposed Development to contribute to or interfere with the successful implementation of policies and strategies for the management of local air quality, the extent and location of changes to individual receptors and how many sensitive locations these represent.

8.91 The achievement of local authority goals for local air quality management are directly linked to the achievement of the air quality objective values in **ES Volume 3, Appendix: Air Quality – Annex 2** and as such this assessment focuses on the likelihood of future achievement of the air quality objective values as a result of the Proposed Development.

BASELINE CONDITIONS

Local Air Quality Management

8.92 The site is located across the administrative boundary of SCDC and CCC. Whilst SCDC has no designated AQMAs, CCC has previously declared an AQMA for *"an area encompassing the inner ring road and all the land within it"* due to exceedances of the annual mean NO_2 Air Quality Strategy (AQS) objective[4]. This AQMA was revoked in early 2025 due to improved NO_2 concentrations. The Proposed Development is located close to the boundary of this AQMA.

Existing Emissions Sources

8.93 The main source of pollution in CCC and SCDC is from road traffic. The latest published monitoring data from SCDC[21] and CCC[22] Air Quality Annual Status Reports, and background pollutant concentrations maps provided by Defra[13], have been considered for the current baseline conditions.

Local Authority Monitoring

8.94 In 2023[23], SCDC undertook continuous air quality monitoring at four locations, of which three were situated at roadside locations, and the other was representative of urban background exposure. Non-automatic (passive) diffusion tube (DT) monitoring of NO_2 was additionally undertaken via a network of 32 monitoring sites.

8.95 CCC undertook continuous monitoring at four roadside sites in 2023, with an additional continuous monitoring site (CM5 – Regent Street) in CCC being managed as part of the Automatic Urban and Rural Network (AURN). CCC also measured NO_2 at 70 DT locations in 2023.

8.96 NO_2, PM_{10} and $PM_{2.5}$ concentrations from monitoring sites located within 1.5km of the Proposed Development have been displayed in Table 8.5, Table 8.6 and Table 8.7.

Table 8.5 Local Authority NO_2 Monitoring Data 1.5km of Site, 2019-2023

Site ID	Site Name	Type	X	Y	Local Authority	Distance to Site (km)	2019	2020	2021	2022	2023
15	Eddington	DT	542748	260046	CCC	0.0	18.0	12.7	11.6	14.6	13.1
19	Huntingdon Road 2 west	DT	543010	260344	CCC	0.0	18.0	11.7	12.1	15.5	13.0
22	Madingley Road	DT	543784	259093	CCC	0.0	30.0	18.1	17.5	21.2	20.6
23	Huntingdon Road 1	DT	543761	259813	CCC	0.2	17.0	11.7	10.7	15.0	13.2
4	Northampton Street	DT	544492	259008	CCC	0.6	31.0	20.1	19.8	20.1	22.6
24	Histon Road 1	DT	544308	259664	CCC	0.7	25.0	19.0	16.5	20.2	19.6
3	Magdalene Street	DT	544677	258992	CCC	0.8	20.0	12.4	13.6	16.6	15.1
21	Victoria Road (outside 208a)	DT	544425	259560	CCC	0.8	22.0	15.8	15.5	18.2	15.8
64	Park Street	DT	544952	258856	CCC	1.0	23.0	15.4	15.3	18.6	15.9
2	Histon Road 2 north	DT	544307	261135	CCC	1.3	21.0	13.8	12.0	15.1	15.1
5	Silver Street	DT	544770	258112	CCC	1.3	24.0	13.0	13.7	16.8	15.3
9	Drummer Street	DT	545235	258485	CCC	1.4	23.0	16.7	17.7	21.2	20.3
IMP	Impington (A14)	Automatic Monitor	543739	261625	SCDC	1.4	16	13	16	16	15
18	Pembroke Street	DT	544884	258098	CCC	1.4	30.0	17.9	17.9	21.0	21.5
45	St Andrew's St	DT	545135	258391	CCC	1.4	32.0	20.6	17.8	26.0	23.3
31	Newnham Road	DT	544529	257730	CCC	1.5	29.0	20.3	21.3	25.7	22.7

Table 8.6 Local Authority PM_{10} Monitoring Data 1.5km of Site, 2019 – 2023

Site ID	Site Name	X	Y	Local Authority	Distance to Site (km)	2019	2020	2021	2022	2023
IMP	Impington (A14)	543739	261625	SCDC	1.4	16	15	15	18	16

Table 8.7 Local Authority $PM_{2.5}$ Monitoring Data within 1.5km of Site, 2019 – 2023

Site ID	Site Name	X	Y	Local Authority	Distance to Site (km)	2019	2020	2021	2022	2023
IMP	Impington (A14)	543739	261625	SCDC	1.4	11	10	13	8	8

[21] *South Cambridgeshire District Council, 2024. Annual Status Report 2024. Available at: https://www.scambs.gov.uk/environment/pollution/air-pollution/local-air-quality-management/*

[22] *Cambridge City Council, 2024. Annual Status Report 2024. Available at: https://www.cambridge.gov.uk/air-quality*

[23] *2023 is the most recent year for which monitoring data have been published.*

8.97 Neither SCDC nor CCC has measured an exceedance of either of the NO_2 objectives (annual mean of 40 µg/m^3, hourly mean of 200 µg/m^3) or either of the PM_{10} or $PM_{2.5}$ objectives (annual mean of 40 µg/m^3 and 20 µg/m^3 respectively) over the most recently reported 5 years (2019-2023), suggesting that air quality in the area is good.

Background Concentrations

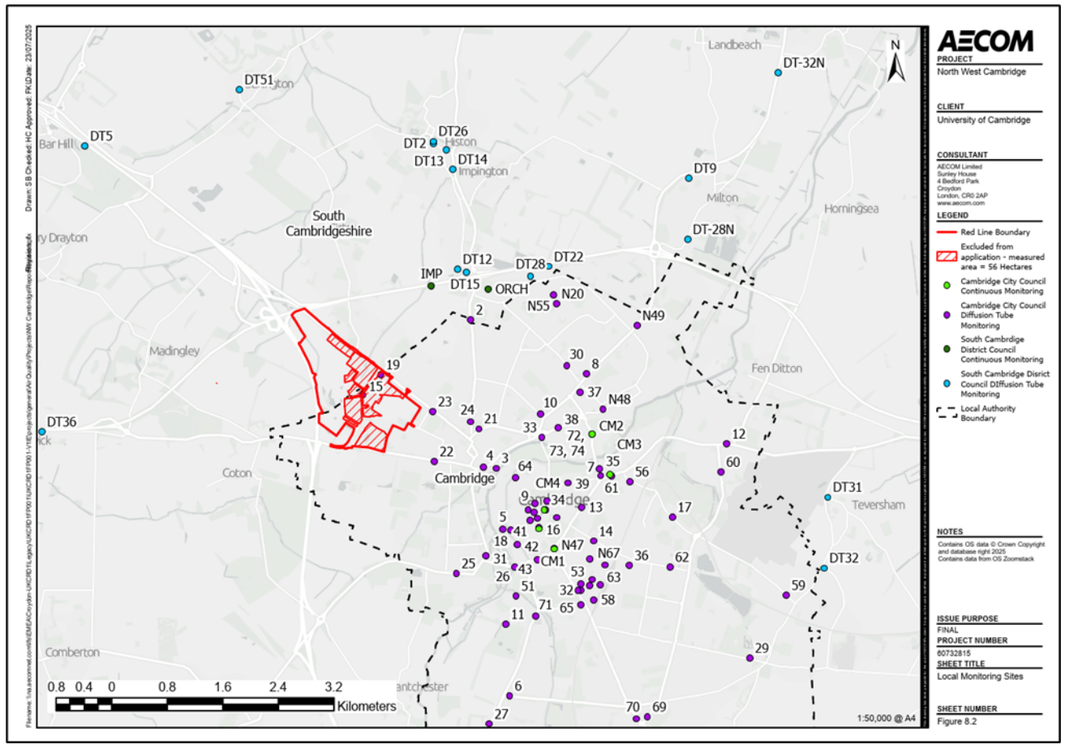
8.98 Background pollution concentrations were sourced from Defra's 2021-based background maps. The data used in this assessment are presented in Table 8.8. Baseline concentrations will also be modelled at part of the ADMS roads dispersion modelling assessment.

Table 8.8 2023, 2027, 2033 and 2038 Sector Removed Background Concentrations (µg/m^3) in Study Area

X and Y Coordinates in Study Area		2023			2027			2033			2038		
		NO_2	PM_{10}	$PM_{2.5}$	NO_2	PM_{10}	$PM_{2.5}$	NO_2	PM_{10}	$PM_{2.5}$	NO_2	PM_{10}	$PM_{2.5}$
543500, 260500	Minimum Concentration	7.5	12.5	6.7	6.4	12.2	6.4	5.0	11.8	6.0	4.6	11.5	5.8
542500, 259500 543500, 259500	Maximum Concentration	8.4	14.4	6.8	6.9	13.7	6.5	5.4	13.3	6.1	5.0	13.1	5.9

8.99 The locations of these monitoring locations relative to the Proposed Development are depicted in Figure 8.2.

Figure 8.2 Monitoring Locations



RECEPTORS AND RECEPTOR SENSITIVITY

8.100 Receptors have been selected to represent locations where people are likely to be present as the assessment is most concerned with human health.

8.101 The national air quality objective values for pollutants have been set at concentrations that provide protection to all members of society, including more vulnerable groups such as the very young, elderly or unwell. As such the sensitivity of receptors was accounted for in the definition of the air quality objective values and therefore all receptors that represent exposure of the public are of equal sensitivity as any member of the public could be present at those locations.

8.102 Receptors to be considered against the annual mean objective include those where members of the public are present in areas affected by regular exposure. This includes building facades of residential properties, schools, hospitals, care homes, etc. Receptors to be considered against the short-term objective include those where members of the public are present in areas where the annual mean objective applies, but also areas with less regular exposure, such as any outdoor locations where the public might reasonably be expected to spend one hour or longer.

8.103 Each discrete receptor selected for inclusion to the modelling assessment represents the maximum level of exposure that could be experienced by other receptors in their vicinity and is therefore considered sufficiently representative of them. As such the sensitivity of receptors was considered in the definition of the air quality objective values, and therefore, no additional subdivision of human health receptors on the basis of building or location type is necessary.

8.104 A number of receptors have been modelled at varying heights to account for the numerous floors on which residences are located. Where multiple heights have not been modelled for existing receptors, the lowest floor of exposure has been assessed.

Existing

8.105 For the construction, interim and operational phase assessments, the potential impacts from road traffic emissions have been quantified at 36 existing representative receptor locations in the vicinity of the application site and local highway network, where there is the potential for a change in road traffic flows (the primary influence of air pollution within the study area).

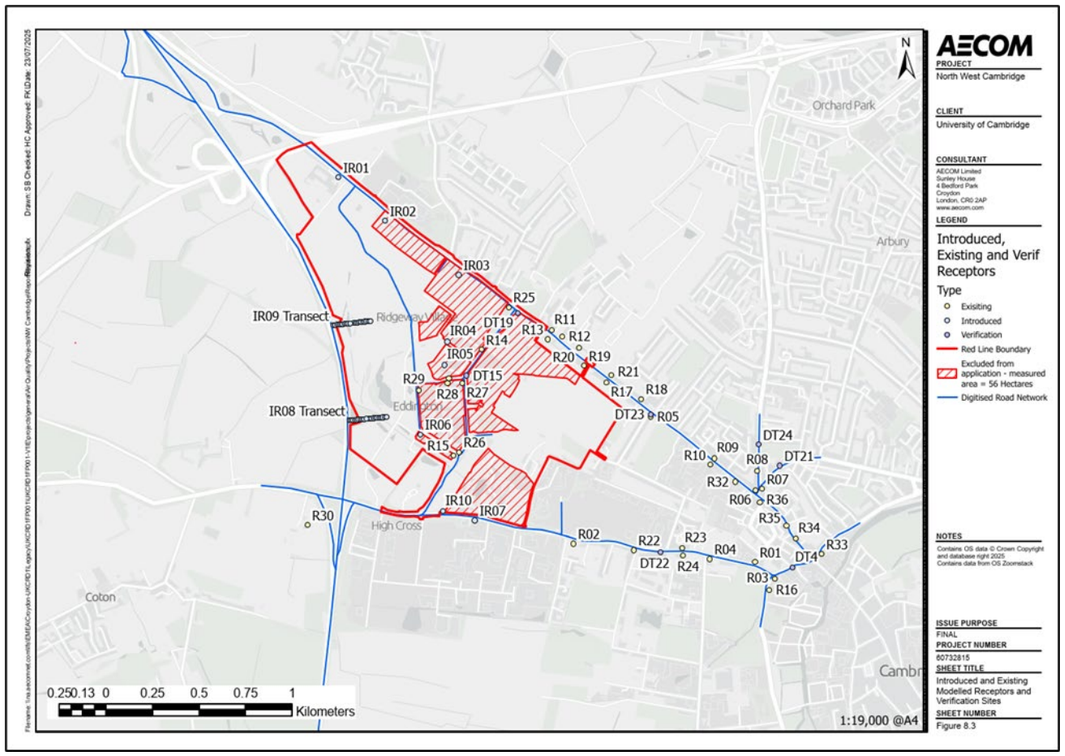
8.106 A full list of modelled sensitive receptors has been presented in Table 8.9. The locations of these receptors relative to the Proposed Development are depicted in Figure 8.3.

Table 8.9 Summary of Existing Receptors

ID	X	Y	Receptor Address	Receptor Type	Modelled Height (m)
R01	544292.53	259042.88	Lucy Cavendish College	Residential	1.5
R02	543317.40	259140.45	53 Madingley Road	Residential	1.5
R03	544399.35	258952.62	37 Northampton Road	Residential	1.5
R04	544049.22	259058.40	9 Madingley Road	Residential	1.5
R05	543731.65	259824.05	6 Storey's Way	Residential	1.5
R06	544295.05	259427.43	Abodus Student Living Castle Hill	Residential	4.5
R07	544330.80	259435.41	265 Victoria Road	Residential	1.5
R08	544303.62	259531.44	4 Cranwell Court	Residential	1.5
R09	544074.10	259598.90	68 Huntingdon Road	Residential	1.5
R10	544051.99	259566.26	Fitzwilliam College	Residential	1.5
R11	543202.19	260287.65	81 Burlton Road	Residential	1.5
R12	543257.53	260253.29	Chapter House	Residential	1.5
R13	543180.87	260239.16	213 Huntingdon Road	Residential	1.5

ID	X	Y	Receptor Address	Receptor Type	Modelled Height (m)
R14	542823.85	260185.04	107 Eddington Avenue	Residential	1.5
R15	542673.85	259615.28	1- 59 Turing Way Apartments	Residential	1.5
R16	544369.06	258891.65	Merton Cottage	Residential	1.5
R17	543493.75	260005.90	171 Huntingdon Road	Residential	1.5
R18	543680.98	259917.58	142 Sherlock Road	Residential	1.5
R19	543375.20	260097.10	183 Huntingdon Road	Residential	1.5
R20	543347.40	260192.95	198 Huntingdon Road	Residential	1.5
R21	543520.40	260046.32	164 Huntingdon Road	Residential	1.5
R22	543641.35	259106.10	31 Madingley Road	Residential	1.5
R23	543902.05	259118.22	19 Benians Court	Residential	1.5
R24	543904.45	259077.47	19A Madingley Road	Residential	1.5
R25	542969.93	260410.24	Holly Nurseries	Residential	1.5
R26	542703.42	259632.17	29 Burkitt Lane	Residential	1.5
R27	542719.95	260003.49	Turing Locke	Residential	4.5
R28	542640.96	260003.49	358 Turing Way	Residential	1.5
R29	542488.96	259965.11	C4 Building	Residential	4.5
R30	541889.89	259241.17	Rectory Farm	Residential	1.5
R31	542649.22	260029.73	The Ash Building	Residential	1.5
R32	544185.79	259473.29	Murray Edwards College	School	4.5
R33	544649.83	259085.50	31 Chesterton Lane	Residential	1.5
R34	544511.98	259168.09	30 Castle Street	Residential	1.5
R35	544460.56	259238.10	53 Castle Street	Residential	1.5
R36	544318.49	259361.96	Block E Mount Pleasant Halls	Residential	1.5

Figure 8.3 Introduced and Existing Receptor Locations and Verification Sites



Introduced

8.107 The Proposed Development will provide new residential and non-residential floorspace and will therefore introduce new sensitive receptors. Due to the phased nature of the Proposed Development, first occupation will occur whilst construction activities are still ongoing. Therefore, seven individual receptors and two transects of receptors introduced as a result of the Proposed Development have been considered in the detailed modelling of the interim and operational scenarios in order to assess site suitability.

8.108 The two transects were used to represent potential introduced receptors. This is because the Proposed Development's plans are 'outline' and specific locations of sensitive receptors have not been finalised. Each transect branches off from two locations along the M11 motorway, at the west of the site boundary up to 200m. A point starting from the road edge, in increments of 10m have been used to identify where sensitive receptors should or should not be located, depending on their comparison to the AQOs. It is expected the detailed design of the Proposed Development would have residential properties set back further from the road.

8.109 As it is not known precisely where sensitive use will be located, all receptors aside from the transects have been chosen in worst case locations closest to emissions sources. In addition, all receptor have been assumed to be residential as this is the most sensitive use class for the purposes of this assessment. The locations of these receptors relative to the Proposed Development are depicted in Figure 8.3.

Table 8.10 Summary of Introduced Receptors

ID	X	Y	Receptor Type	Modelled Height (m)
IR01	542056.3	261109.6	Residential	1.5
IR02	542306.8	260876	Residential	1.5
IR03	542701.5	260584.5	Residential	1.5
IR04	542640.5	260225.7	Residential	1.5
IR05	542624.5	260100.6	Residential	1.5
IR06	542494.8	259727.2	Residential	1.5
IR07	542787.9	259265.8	Residential	1.5
IR08_1.57m	542117	259803	Residential Transect	1.5
IR08_10m	542125.4	259803.8	Residential Transect	1.5
IR08_20m	542135.3	259804.7	Residential Transect	1.5
IR08_30m	542145.3	259805.7	Residential Transect	1.5
IR08_40m	542155.3	259806.6	Residential Transect	1.5
IR08_50m	542165.2	259807.6	Residential Transect	1.5
IR08_60m	542175.2	259808.5	Residential Transect	1.5
IR08_70m	542185.1	259809.4	Residential Transect	1.5
IR08_80m	542195.1	259810.4	Residential Transect	1.5
IR08_90m	542205	259811.3	Residential Transect	1.5
IR08_100m	542215	259812.3	Residential Transect	1.5
IR08_110m	542224.9	259813.2	Residential Transect	1.5
IR08_120m	542234.9	259814.1	Residential Transect	1.5
IR08_130m	542244.9	259815.1	Residential Transect	1.5
IR08_140m	542254.8	259816	Residential Transect	1.5
IR08_150m	542264.8	259817	Residential Transect	1.5
IR08_160m	542274.7	259817.9	Residential Transect	1.5
IR08_170m	542284.7	259818.9	Residential Transect	1.5
IR08_180m	542294.6	259819.8	Residential Transect	1.5
IR08_190m	542304.6	259820.7	Residential Transect	1.5
IR08_200m	542314.5	259821.7	Residential Transect	1.5
IR09_0.5m	542030.0	260315.0	Residential Transect	1.5
IR09_10m	542039.5	260316.0	Residential Transect	1.5
IR09_20m	542049.4	260317.1	Residential Transect	1.5
IR09_30m	542059.3	260318.2	Residential Transect	1.5
IR09_40m	542069.3	260319.3	Residential Transect	1.5
IR09_50m	542079.2	260320.4	Residential Transect	1.5
IR09_60m	542089.2	260321.5	Residential Transect	1.5
IR09_70m	542099.1	260322.6	Residential Transect	1.5
IR09_80m	542109.0	260323.7	Residential Transect	1.5
IR09_90m	542119.0	260324.8	Residential Transect	1.5
IR09_100m	542128.9	260325.9	Residential Transect	1.5
IR09_110m	542138.9	260327.0	Residential Transect	1.5
IR09_120m	542148.8	260328.1	Residential Transect	1.5
IR09_130m	542158.7	260329.2	Residential Transect	1.5
IR09_140m	542168.7	260330.3	Residential Transect	1.5
IR09_150m	542178.6	260331.4	Residential Transect	1.5
IR09_160m	542188.6	260332.5	Residential Transect	1.5
IR09_170m	542198.5	260333.6	Residential Transect	1.5
IR09_180m	542208.4	260334.7	Residential Transect	1.5
IR09_190m	542218.4	260335.8	Residential Transect	1.5
IR09_200m	542228.3	260336.9	Residential Transect	1.5
IR10	542616.6	259316.9	Residential	1.5

EMBEDDED MITIGATION

Enabling, Demolition and Construction

8.110 There are a range of mitigation measures which can be followed to reduce the likely nuisance and human-health impacts of the dust and PM_{10}, which if effectively implemented should reduce impacts to a negligible level. The magnitude of impacts from construction dust depends on the mitigation measures adopted. As the guidance specifies that there should be no assessment of impacts prior to mitigation, the mitigation measures identified are considered embedded mitigation.

8.111 A dust risk assessment has been carried out to classify the risk of dust impacts as set out in **ES Volume 3, Appendix: Air Quality – Annex 3**, which then allows mitigation measures commensurate to the risk to be identified. The measures set out below relate to 'high risk sites'[8], and should be implemented during the demolition and construction phase.

8.112 It is recognised that not all of the recommended measures may be appropriate or feasible however this list is provided to recommend the desirable mitigation and is intentionally designed not to limit mitigation that is finally selected by the construction contractor to avoid issues once the planning is agreed.

8.113 A scheme for dust monitoring, assessment and mitigation for all demolition and construction activities will be issued as part of a Dust Management Plan (DMP) or CEMP to be approved in writing by the Local Planning Authority prior to commencement of the development. The DMP/CEMP will be in accordance with the best practice guidance laid out by the IAQM[8], and shall include:

- A dust risk assessment to determine the level of dust risk the site poses and the applicable mitigation measures;
- The identification of dust sensitive premises to be used as the location for dust monitoring, including any arrangements proposed for amending the selected locations if new dust sensitive premises are introduced;
- The frequency and other arrangements for dust monitoring; and
- The arrangements for reporting the results of dust monitoring and the implementation of mitigation measures to the Local Planning Authority.

8.114 The construction shall thereafter be carried out in accordance with the DMP/CEMP for dust monitoring, assessment and mitigation for all demolition and construction activities unless otherwise approved in writing by the Local Planning Authority.

Table 8.11 Dust Mitigation for a High-Risk Site

Mitigation Measure	Recommendation Level Highly Recommended (H) / Desirable (D) / Not Required (N)
Communications	
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	H
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	H
Display the head or regional office contact information.	H
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, real time PM_{10} continuous monitoring and/or visual inspections.	H
Site Management	
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	H
Make the complaints log available to the local authority when asked.	H
Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book	H
Hold liaison meetings with other high risk construction sites within 250 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.	H
Monitoring	
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills in close proximity to the site boundary, with cleaning to be provided if necessary.	H
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.	H
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	H
Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	H
Preparing and Maintaining the Site	
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	H
Enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	H
Avoid site runoff of water or mud.	H
Keep site fencing, barriers and scaffolding clean using wet methods.	H
Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	H
Cover, seed or fence stockpiles to prevent wind whipping.	H
Operating Vehicle/Machinery and Sustainable Travel	
Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.	H
Ensure all vehicles switch off engines when stationary - no idling vehicles.	H
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	H
Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).	H
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	H
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	H
Operations	
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	H
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate.	H
Use enclosed chutes and conveyors and covered skips.	H
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	H
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	H
Waste Management	
Avoid bonfires and burning of waste materials.	H
Demolition	
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	H
Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	H
Avoid explosive blasting, using appropriate manual or mechanical alternatives	H
Bag and remove any biological debris or damp down such material before demolition.	H
Earthworks	
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable	H
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable	H
Only remove the cover in small areas during work and not all at once	H
Construction	
Avoid scabbling (roughening of concrete surfaces) if possible.	H
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	H
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	H

Mitigation Measure	Recommendation Level Highly Recommended (H) / Desirable (D) / Not Required (N)
For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	D
Trackout	
Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	H
Avoid dry sweeping of large areas.	H
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	H
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	H
Record all inspections of haul routes and any subsequent action in a site log book.	H
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	H
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	H
Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits	H
Access gates to be located at least 10 m from receptors where possible.	H

Completed Development

8.115 The Proposed Development designs are 'outline' and specific details of embedded mitigation are not known at this stage. The Proposed Development will have electric chargers, which will encourage the uptake of sustainable transport. In addition, the energy strategy incorporates an all-electric approach which will minimise local emissions.

POTENTIAL EFFECTS AND SIGNIFICANCE

Enabling, Demolition and Construction

Dust Risk Assessment

8.116 A 'Dust Risk Assessment' has been undertaken in accordance with IAQM guidance, which is detailed within **ES Volume 3, Appendix: Air Quality – Annex 3**. The Dust Risk Assessment has identified the site as being 'High Risk'. The assessment outlines the appropriate level of mitigation required at the site (in accordance with the guidance) to either avoid or reduce potential effects to neighbouring sensitive receptors (property and amenity; human health). The mitigation measures are considered embedded mitigation and have been outlined in Table 8.11.

8.117 Based on the IAQM guidance, a qualitative assessment of the impacts has been carried out. With the recommended mitigation in place, the impacts due to construction dust will be not significant.

Predicted Effects on Air Quality as a result of Construction Traffic

Construction Year 2027

8.118 Table 8.12 presents the modelled predicted annual mean pollutant concentrations and associated impacts at modelled existing sensitive receptors during the construction of the Proposed Development in 2027 for NO_2, PM_{10} and $PM_{2.5}$.

8.119 Table 8.13 outlines the impact descriptors at modelled existing sensitive receptors for all pollutants.

Table 8.12 Annual Mean Concentrations Withand Without Proposed Development at Existing Receptors, Construction Year 2027

Receptor	NO_2			PM_{10}			$PM_{2.5}$		
	DM	DS	Change	DM	DS	Change	DM	DS	Change
R01	12.9	12.9	<0.1	14.1	14.1	<0.1	8.0	8.0	<0.1
R02	9.6	9.6	<0.1	13.3	13.3	<0.1	7.0	7.0	<0.1
R03	14.3	14.3	<0.1	13.7	13.7	<0.1	7.6	7.6	<0.1
R04	11.7	11.7	<0.1	13.6	13.6	<0.1	7.7	7.7	<0.1
R05	10.6	10.6	<0.1	13.7	13.7	<0.1	7.2	7.2	<0.1
R06	13.5	13.5	<0.1	14.4	14.4	<0.1	8.1	8.1	<0.1
R07	15.0	15.0	<0.1	15.1	15.1	<0.1	8.5	8.5	<0.1
R08	14.1	14.1	<0.1	14.6	14.6	<0.1	8.2	8.2	<0.1
R09	15.1	15.1	<0.1	15.2	15.2	<0.1	8.5	8.5	<0.1
R10	11.2	11.2	<0.1	13.4	13.4	<0.1	7.6	7.6	<0.1
R11	13.5	13.5	<0.1	15.1	15.1	<0.1	7.9	7.9	<0.1
R12	11.1	11.1	<0.1	14.0	14.0	<0.1	7.4	7.4	<0.1
R13	9.3	9.3	<0.1	13.2	13.2	<0.1	6.9	6.9	<0.1
R14	9.5	9.5	<0.1	14.3	14.3	<0.1	7.0	7.0	<0.1
R15	8.6	8.6	<0.1	14.5	14.5	<0.1	6.9	6.9	<0.1
R16	13.7	13.7	<0.1	13.4	13.4	<0.1	7.5	7.5	<0.1
R17	10.0	10.0	<0.1	13.5	13.5	<0.1	7.1	7.1	<0.1
R18	11.8	11.8	<0.1	14.2	14.2	<0.1	7.5	7.5	<0.1
R19	10.0	10.0	<0.1	13.5	13.5	<0.1	7.1	7.1	<0.1
R20	10.2	10.2	<0.1	13.6	13.6	<0.1	7.1	7.1	<0.1
R21	11.1	11.1	<0.1	14.0	14.0	<0.1	7.4	7.4	<0.1
R22	10.8	10.8	<0.1	13.8	13.8	<0.1	7.3	7.3	<0.1
R23	12.1	12.1	<0.1	14.3	14.3	<0.1	7.6	7.6	<0.1
R24	10.0	10.0	<0.1	13.4	13.4	<0.1	7.1	7.1	<0.1
R25	11.3	11.3	<0.1	15.2	15.2	<0.1	7.5	7.5	<0.1
R26	9.1	9.2	0.1	14.7	14.7	<0.1	7.0	7.0	<0.1
R27	8.5	8.5	<0.1	13.9	13.9	<0.1	6.8	6.8	<0.1
R28	9.5	9.5	<0.1	14.3	14.3	<0.1	7.0	7.0	<0.1
R29	9.2	9.2	<0.1	14.7	14.7	<0.1	7.0	7.0	<0.1
R30	8.8	8.8	<0.1	12.9	12.9	<0.1	6.6	6.6	<0.1
R31	10.1	10.1	<0.1	14.5	14.5	<0.1	7.1	7.1	<0.1
R32	11.2	11.2	<0.1	13.4	13.4	<0.1	7.6	7.6	<0.1
R33	12.8	12.8	<0.1	14.1	14.1	<0.1	7.9	7.9	<0.1
R34	13.4	13.4	<0.1	14.3	14.3	<0.1	8.1	8.1	<0.1
R35	12.2	12.2	<0.1	13.8	13.8	<0.1	7.8	7.8	<0.1
R36	11.5	11.5	<0.1	13.5	13.5	<0.1	7.7	7.7	<0.1

DM = Do Minimum
DS = Do Something

Table 8.13 Impact Descriptors on Annual Mean Concentrations With the Proposed Development at Existing Receptors, Construction Year 2027

Receptor	Effect Descriptors		
	NO_2	PM_{10}	$PM_{2.5}$
R01	Negligible	Negligible	Negligible
R02	Negligible	Negligible	Negligible
R03	Negligible	Negligible	Negligible
R04	Negligible	Negligible	Negligible
R05	Negligible	Negligible	Negligible
R06	Negligible	Negligible	Negligible
R07	Negligible	Negligible	Negligible
R08	Negligible	Negligible	Negligible
R09	Negligible	Negligible	Negligible
R10	Negligible	Negligible	Negligible
R11	Negligible	Negligible	Negligible
R12	Negligible	Negligible	Negligible
R13	Negligible	Negligible	Negligible
R14	Negligible	Negligible	Negligible
R15	Negligible	Negligible	Negligible
R16	Negligible	Negligible	Negligible
R17	Negligible	Negligible	Negligible
R18	Negligible	Negligible	Negligible
R19	Negligible	Negligible	Negligible
R20	Negligible	Negligible	Negligible
R21	Negligible	Negligible	Negligible
R22	Negligible	Negligible	Negligible
R23	Negligible	Negligible	Negligible
R24	Negligible	Negligible	Negligible
R25	Negligible	Negligible	Negligible
R26	Negligible	Negligible	Negligible
R27	Negligible	Negligible	Negligible
R28	Negligible	Negligible	Negligible
R29	Negligible	Negligible	Negligible
R30	Negligible	Negligible	Negligible
R31	Negligible	Negligible	Negligible
R32	Negligible	Negligible	Negligible
R33	Negligible	Negligible	Negligible
R34	Negligible	Negligible	Negligible
R35	Negligible	Negligible	Negligible
R36	Negligible	Negligible	Negligible

8.120 Predicted annual mean NO_2 concentrations 'With' and 'Without' the Proposed Development in the Construction Year 2027 are predicted to be below the applicable AQS objective at all modelled receptor locations. The highest NO_2 concentration is 15.1 µg/m^3 predicted at R09 in the 'With' Proposed Development construction traffic scenario, representing a residential building at 68 Huntingdon Road. The largest predicted change in annual mean NO_2 concentrations due to construction traffic, is 0.1 µg/m^3 at R26 which is located adjacent to 29 Burkitt Lane. Due to the low total NO_2 concentrations at all modelled existing sensitive receptors and the small change in concentrations, there is predicted to be a negligible impact at all receptors arising from construction traffic from the Proposed Development.

8.121 The predicted annual mean NO_2 concentrations at all receptors are well below 60 µg/m^3, which suggests that the short-term NO_2 objective is unlikely to be exceeded at any receptor during construction of the Proposed Development.

8.122 Predicted annual mean PM_{10} concentrations 'With' and 'Without' the Proposed Development in Construction Year 2027 are predicted to be well below the applicable AQS objective at all modelled receptor locations, with the highest PM_{10} concentration of 15.2 µg/m^3 being predicted at R09 and R25, both located along Huntingdon Road. The largest change in concentrations resulting from the Proposed Development is predicted to be at R26 located at 29 Burkitt Lane, however this change is less than 0.01 µg/m^3, which will have a negligible impact on air quality. Similarly, all other receptors will experience a negligible impact in terms of PM_{10} concentrations.

8.123 As annual mean PM_{10} concentrations are predicted to be well below 32 µg/m^3 the predicted short-term (24-hour) AQS objective is anticipated to be achieved at all modelled receptors.

8.124 Predicted annual mean $PM_{2.5}$ concentrations 'With' and 'Without' the Proposed Development in Construction Year 2027 are predicted to be well below the applicable AQS objective at all modelled receptor locations, with the highest $PM_{2.5}$ concentration of 8.5 µg/m^3 being predicted at R07 and R09. All modelled existing sensitive receptors are therefore also predicted to meet the Environmental Act interim target of 12 µg/m^3 by 2028 which is when this target comes into force. All modelled receptors are predicted to have a change in annual mean $PM_{2.5}$ concentrations of less than 0.01 µg/m^3, which is considered to have a negligible impact on air quality.

8.125 The Proposed Development construction traffic is not predicted to cause an exceedance of the AQS objective at any receptor and overall, the impact on existing air quality in the Construction Year 2027 is considered to be not significant for all pollutants.

Phasing / Interim Year

8.126 Table 8.14 presents the modelled predicted annual mean pollutant concentrations and associated impacts at modelled sensitive receptors during peak construction and partial operation of the Proposed Development in 2033 for NO_2, PM_{10} and $PM_{2.5}$.

8.127 Table 8.15 outlines the impact descriptors at modelled existing sensitive receptors for all pollutants.

8.128 Due to the anticipation that phased occupation of the Proposed Development will take place, an assessment of suitability has been conducted at proposed receptors based on peak construction phase and partial operation road traffic flows (2033) in Table 8.19 within the '*Site Suitability*' section of this ES chapter.

Table 8.14 Annual Mean Concentrations With and Without Proposed Development at Existing Receptors, Interim Year 2033

Receptor	NO_2			PM_{10}			$PM_{2.5}$		
	DM	DS	Change	DM	DS	Change	DM	DS	Change
R01	8.9	8.9	<0.1	13.6	13.6	<0.1	7.5	7.5	<0.1
R02	6.9	6.9	<0.1	12.8	12.8	<0.1	6.6	6.6	<0.1
R03	9.9	9.9	<0.1	13.2	13.2	<0.1	7.2	7.2	<0.1
R04	8.3	8.4	<0.1	13.1	13.1	<0.1	7.3	7.3	<0.1
R05	7.2	7.3	<0.1	13.2	13.3	<0.1	6.8	6.9	<0.1
R06	9.1	9.1	<0.1	13.8	13.9	<0.1	7.7	7.7	<0.1
R07	9.8	9.9	<0.1	14.5	14.5	<0.1	8.0	8.0	<0.1
R08	9.4	9.5	0.1	14.0	14.1	<0.1	7.8	7.8	<0.1
R09	9.8	9.8	0.1	14.6	14.7	0.1	8.1	8.1	<0.1

Receptor	NO_2			PM_{10}			$PM_{2.5}$		
	DM	DS	Change	DM	DS	Change	DM	DS	Change
R10	8.1	8.1	<0.1	12.9	13.0	<0.1	7.2	7.2	<0.1
R11	8.3	8.3	0.1	14.6	14.6	0.1	7.5	7.5	<0.1
R12	7.3	7.3	<0.1	13.5	13.6	<0.1	6.9	7.0	<0.1
R13	6.5	6.5	<0.1	12.8	12.8	<0.1	6.5	6.6	<0.1
R14	6.4	6.3	-0.1	13.9	13.8	-0.1	6.6	6.6	<0.1
R15	6.1	6.1	<0.1	14.1	14.1	<0.1	6.5	6.5	<0.1
R16	9.6	9.6	<0.1	12.9	12.9	<0.1	7.0	7.0	<0.1
R17	6.8	6.8	<0.1	13.1	13.1	<0.1	6.7	6.7	<0.1
R18	7.8	7.8	<0.1	13.7	13.8	<0.1	7.1	7.1	<0.1
R19	6.8	6.8	<0.1	13.1	13.1	<0.1	6.7	6.7	<0.1
R20	6.8	6.9	<0.1	13.1	13.2	<0.1	6.7	6.7	<0.1
R21	7.2	7.3	<0.1	13.5	13.6	<0.1	6.9	7.0	<0.1
R22	7.4	7.4	<0.1	13.3	13.3	<0.1	6.9	6.9	<0.1
R23	8.0	8.0	<0.1	13.8	13.8	<0.1	7.1	7.1	<0.1
R24	7.0	7.0	<0.1	12.9	12.9	<0.1	6.7	6.7	<0.1
R25	7.2	7.1	-0.1	14.7	14.6	-0.1	7.1	7.0	<0.1
R26	6.3	6.4	<0.1	14.3	14.3	<0.1	6.6	6.7	<0.1
R27	6.0	6.0	<0.1	13.5	13.4	<0.1	6.4	6.4	<0.1
R28	6.4	6.3	-0.1	13.8	13.8	-0.1	6.6	6.6	<0.1
R29	6.4	6.4	<0.1	14.3	14.3	<0.1	6.6	6.7	<0.1
R30	6.1	6.1	<0.1	12.5	12.5	<0.1	6.2	6.2	<0.1
R31	6.6	6.5	-0.1	14.1	14.0	-0.1	6.7	6.7	-0.1
R32	8.1	8.1	<0.1	12.9	12.9	<0.1	7.2	7.2	<0.1
R33	8.8	8.8	<0.1	13.5	13.5	<0.1	7.5	7.5	<0.1
R34	9.1	9.1	<0.1	13.8	13.8	<0.1	7.6	7.6	<0.1
R35	8.6	8.6	<0.1	13.3	13.3	<0.1	7.4	7.4	<0.1
R36	8.2	8.2	<0.1	13.0	13.1	<0.1	7.2	7.2	<0.1

Table 8.15 Impact Descriptors on Annual Mean Concentrations With the Proposed Development at Existing Receptors, Interim Year 2033

Receptor	Effect Descriptors		
	NO_2	PM_{10}	$PM_{2.5}$
R01	Negligible	Negligible	Negligible
R02	Negligible	Negligible	Negligible
R03	Negligible	Negligible	Negligible
R04	Negligible	Negligible	Negligible
R05	Negligible	Negligible	Negligible
R06	Negligible	Negligible	Negligible
R07	Negligible	Negligible	Negligible
R08	Negligible	Negligible	Negligible
R09	Negligible	Negligible	Negligible
R10	Negligible	Negligible	Negligible
R11	Negligible	Negligible	Negligible
R12	Negligible	Negligible	Negligible
R13	Negligible	Negligible	Negligible
R14	Negligible	Negligible	Negligible
R15	Negligible	Negligible	Negligible
R16	Negligible	Negligible	Negligible
R17	Negligible	Negligible	Negligible
R18	Negligible	Negligible	Negligible
R19	Negligible	Negligible	Negligible
R20	Negligible	Negligible	Negligible
R21	Negligible	Negligible	Negligible
R22	Negligible	Negligible	Negligible
R23	Negligible	Negligible	Negligible
R24	Negligible	Negligible	Negligible
R25	Negligible	Negligible	Negligible
R26	Negligible	Negligible	Negligible
R27	Negligible	Negligible	Negligible
R28	Negligible	Negligible	Negligible
R29	Negligible	Negligible	Negligible
R30	Negligible	Negligible	Negligible
R31	Negligible	Negligible	Negligible
R32	Negligible	Negligible	Negligible
R33	Negligible	Negligible	Negligible
R34	Negligible	Negligible	Negligible
R35	Negligible	Negligible	Negligible
R36	Negligible	Negligible	Negligible

8.129 Predicted annual mean NO_2 concentrations 'With' and 'Without' the Proposed Development in Interim Year 2033 peak construction and partial operational traffic are predicted to be below the applicable AQS objective at all modelled receptor locations. The highest NO_2 concentration is 9.9 µg/m3 predicted at R03 and R07 in the 'With' scenario, representing a residential building at 37 Northampton Street and another on Victoria Road. The largest predicted change in annual mean NO_2 concentrations, due to construction traffic, is 0.1 $\mu g/m^3$ at R09 and R08. Due to the low total NO_2 concentrations at all modelled existing sensitive receptors and the small change in concentrations, there is predicted to be a negligible impact at all receptors arising from the Proposed Development in the Interim Year 2033.

8.130 The predicted annual mean NO_2 concentrations at all receptors are well below 60 $\mu g/m^3$, which suggests that the short-term NO_2 objective is unlikely to be exceeded at any receptor during Interim Year 2033.

8.131 Predicted annual mean PM_{10} concentrations 'With' and 'Without' the Proposed Development in Interim Year 2033 are predicted to be well below the applicable AQS objective at all modelled receptor locations, with the highest PM_{10} concentration of 14.7 $\mu g/m^3$ being predicted at R09 in the 'With' peak construction and partial operational traffic scenario. The largest increase in concentrations resulting from the Proposed Development is predicted to be at R09 and R11 (increase of 0.1 $\mu g/m^3$), which will have a negligible impact on air quality. Some sensitive receptors are predicted to see a small decrease in concentrations due to the redistribution of traffic following the opening of the Cartwright Avenue having a larger beneficial effect than the adverse effect of the additional traffic associated with the additional traffic. All receptors will experience a negligible impact in terms of PM_{10} concentrations.

8.132 As annual mean PM_{10} concentrations are predicted to be well below 32 µg/m^3 the predicted short-term (24-hour) AQS objective is anticipated to be achieved at all modelled receptors.

8.133 Predicted annual mean $PM_{2.5}$ concentrations 'With' and 'Without' the Proposed Development in Interim Year 2033 are predicted to be well below the applicable AQS objective at all modelled receptor locations, with the highest $PM_{2.5}$ concentration of 8.1 µg/m^3 being predicted at R09. All modelled existing sensitive receptors are therefore also predicted to meet the Environmental Act interim target of 12 µg/m^3 by 2028. All modelled receptors are predicted to have a change in annual mean $PM_{2.5}$ concentrations of less than 0.01 µg/m^3, which is considered to have a negligible impact on air quality.

8.134 The Proposed Development construction / operational traffic is not predicted to cause an exceedance of the AQS objective at any receptor and overall, the impact on existing air quality in the Interim Year 2033 is considered to be not significant for all pollutants.

Completed Development

Predicted Effects on Air Quality as a Result of Operational Traffic

8.135 Table 8.16 presents the modelled predicted annual mean pollutant concentrations and associated impacts at modelled sensitive receptors during full operation of the Proposed Development in 2038 for NO_2, PM_{10} and $PM_{2.5}$.

8.136 Table 8.17 outlines the impact descriptors at modelled existing sensitive receptors for all pollutants.

8.137 An assessment of site suitability has been conducted at proposed receptors based on operational phase road traffic flows for 2038 in Table 8.20.

Table 8.16 Annual Mean Concentrations With and Without Proposed Development at Existing Receptors, Operational Year 2038

Receptor	NO_2			PM_{10}			$PM_{2.5}$		
	DM	DS	Change	DM	DS	Change	DM	DS	Change
R01	8.0	8.0	<0.1	13.9	13.9	<0.1	7.6	7.5	-0.1
R02	6.3	6.3	<0.1	12.9	12.9	<0.1	6.5	6.6	0.1
R03	8.8	8.8	<0.1	13.3	13.3	<0.1	7.1	7.2	0.1
R04	7.6	7.6	<0.1	13.3	13.3	<0.1	7.2	7.3	<0.1
R05	6.2	6.3	<0.1	12.9	13.0	0.1	6.6	6.9	0.3
R06	7.8	7.8	<0.1	13.5	13.6	0.1	7.4	7.7	0.3
R07	8.3	8.3	0.1	14.2	14.3	0.1	7.7	8.0	0.3
R08	8.1	8.2	0.1	13.7	13.8	0.1	7.5	7.8	0.3
R09	8.1	8.2	0.1	14.2	14.4	0.2	7.8	8.1	0.3
R10	7.2	7.2	<0.1	12.6	12.7	0.1	6.9	7.2	0.3
R11	6.7	6.8	0.1	14.3	14.5	0.2	7.3	7.5	0.3
R12	6.1	6.1	<0.1	13.3	13.4	0.1	6.7	7.0	0.3
R13	5.6	5.7	<0.1	12.5	12.6	0.1	6.3	6.6	0.2
R14	5.5	5.6	<0.1	13.8	13.9	0.1	6.5	6.6	0.1
R15	5.4	5.4	0.1	13.9	14.0	0.1	6.4	6.5	0.2
R16	8.5	8.5	<0.1	12.9	12.9	<0.1	6.9	7.0	0.1
R17	5.8	5.8	<0.1	12.8	12.9	0.1	6.4	6.7	0.3
R18	6.5	6.6	0.1	13.4	13.5	0.1	6.8	7.1	0.3
R19	5.8	5.8	<0.1	12.8	12.9	0.1	6.4	6.7	0.3
R20	5.8	5.9	<0.1	12.9	12.9	0.1	6.5	6.7	0.3
R21	6.1	6.1	<0.1	13.2	13.4	0.1	6.7	7.0	0.3
R22	6.7	6.7	<0.1	13.6	13.6	<0.1	6.9	6.9	-0.1
R23	7.1	7.2	<0.1	14.3	14.3	<0.1	7.3	7.1	-0.2
R24	6.4	6.4	<0.1	13.1	13.1	<0.1	6.7	6.7	<0.1
R25	6.0	6.0	<0.1	14.6	14.6	<0.1	6.9	7.0	0.1
R26	5.5	5.7	0.1	14.1	14.4	0.2	6.5	6.7	0.2
R27	5.3	5.3	<0.1	13.3	13.3	0.1	6.2	6.4	0.2
R28	5.5	5.6	0.1	13.8	13.9	0.1	6.5	6.6	0.1
R29	5.5	5.6	0.1	14.2	14.3	0.2	6.5	6.7	0.2
R30	5.3	5.4	<0.1	12.3	12.4	<0.1	6.1	6.2	0.2
R31	5.7	5.8	0.1	14.0	14.2	0.1	6.6	6.7	0.1
R32	7.2	7.2	<0.1	12.6	12.7	0.1	6.9	7.2	0.3
R33	7.8	7.8	<0.1	13.5	13.5	<0.1	7.3	7.5	0.2
R34	7.9	7.9	<0.1	13.6	13.6	0.1	7.4	7.6	0.2
R35	7.5	7.6	<0.1	13.1	13.1	<0.1	7.1	7.4	0.3
R36	7.3	7.3	<0.1	12.8	12.8	0.1	7.0	7.2	0.3

Table 8.17 Impact Descriptors on Annual Mean Concentrations With the Proposed Development at Existing Receptors, Operational Year 2038

Receptor	Effect Descriptors		
	NO_2	PM_{10}	$PM_{2.5}$
R01	Negligible	Negligible	Negligible
R02	Negligible	Negligible	Negligible
R03	Negligible	Negligible	Negligible
R04	Negligible	Negligible	Negligible
R05	Negligible	Negligible	Negligible
R06	Negligible	Negligible	Negligible
R07	Negligible	Negligible	Negligible
R08	Negligible	Negligible	Negligible
R09	Negligible	Negligible	Negligible
R10	Negligible	Negligible	Negligible
R11	Negligible	Negligible	Negligible
R12	Negligible	Negligible	Negligible
R13	Negligible	Negligible	Negligible
R14	Negligible	Negligible	Negligible
R15	Negligible	Negligible	Negligible
R16	Negligible	Negligible	Negligible
R17	Negligible	Negligible	Negligible
R18	Negligible	Negligible	Negligible
R19	Negligible	Negligible	Negligible
R20	Negligible	Negligible	Negligible
R21	Negligible	Negligible	Negligible
R22	Negligible	Negligible	Negligible

Receptor	Effect Descriptors		
	NO_2	PM_{10}	$PM_{2.5}$
R23	Negligible	Negligible	Negligible
R24	Negligible	Negligible	Negligible
R25	Negligible	Negligible	Negligible
R26	Negligible	Negligible	Negligible
R27	Negligible	Negligible	Negligible
R28	Negligible	Negligible	Negligible
R29	Negligible	Negligible	Negligible
R30	Negligible	Negligible	Negligible
R31	Negligible	Negligible	Negligible
R32	Negligible	Negligible	Negligible
R33	Negligible	Negligible	Negligible
R34	Negligible	Negligible	Negligible
R35	Negligible	Negligible	Negligible
R36	Negligible	Negligible	Negligible

8.138 Predicted annual mean NO_2 concentrations 'With' and 'Without' the Proposed Development in Operational Year 2038 are predicted to be below the applicable AQS objective at all modelled receptor locations. The highest NO_2 concentration is 8.8 µg/m^3 predicted at R03 in the 'With' scenario, representing a residential building at 37 Northampton Street. The largest predicted change in annual mean NO_2 concentrations, due to construction traffic, is 0.1 µg/m^3 at R07, R08, R09, R11, R15, R18, R26, R28, R29 and R31. Due to the low total NO_2 concentrations at all modelled existing sensitive receptors and the small change in concentrations, there is predicted to be a negligible impact at all receptors arising from the Proposed Development in the Operational Year 2038.

8.139 The predicted annual mean NO_2 concentrations at all receptors are well below 60 µg/m^3, which suggests that the short-term NO_2 objective is unlikely to be exceeded at any receptor during Operational Year 2038.

8.140 Predicted annual mean PM_{10} concentrations 'With' and 'Without' the Proposed Development in Interim Year 2033 are predicted to be well below the applicable AQS objective at all modelled receptor locations, with the highest PM_{10} concentration of 14.6 µg/m^3 being predicted at R25 in the 'With' operational traffic scenario. The largest increase in concentrations resulting from the Proposed Development is predicted to be at R26 with an increase of 0.2 µg/m^3. All receptors will experience a negligible impact in terms of PM_{10} concentrations.

8.141 As annual mean PM_{10} concentrations are predicted to be well below 32 µg/m^3 the predicted short-term (24-hour) AQS objective is anticipated to be achieved at all modelled receptors.

8.142 Predicted annual mean $PM_{2.5}$ concentrations 'With' and 'Without' the Proposed Development in Operational Year 2038 are predicted to be well below the applicable AQS objective at all modelled receptor locations, with the highest $PM_{2.5}$ concentration of 8.1 µg/m^3 being predicted at R09. All modelled existing sensitive receptors are therefore also predicted to meet the Environmental Act interim target of 12 µg/m^3 by 2028.The largest predicted increase in annual mean $PM_{2.5}$ is 0.3 µg/m^3 at 17 modelled sensitive receptors. However, due to the low modelled concentrations this is considered to have a negligible impact on air quality.

8.143 The Proposed Development traffic is not predicted to cause an exceedance of the AQS objective at any receptor and overall, the impact on existing air quality in the Operational Year 2038 is considered to be not significant for all pollutants.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Enabling, Demolition and Construction Mitigation

Dust and Fugitive Emissions of Particulate Matter

8.144 As discussed previously under '*Embedded Mitigation*', there are a range of mitigation measures which can be followed to reduce the likely nuisance and human-health impacts of the dust and PM_{10}, which if effectively implemented should reduce impacts to a negligible level.

8.145 Assuming the measures set out previously for a 'High Risk' site are implemented as part of a DMP or CEMP, no additional mitigation and/or monitoring is required.

Emissions from Construction Phase Road Traffic

8.146 With regard to construction phase road traffic emissions, the predicted changes in annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations at all modelled receptor locations are predicted to be negligible during Construction Year 2027. The predicted changes at all receptors do not lead to any exceedances of the AQS objectives.

8.147 The overall predicted effect from road traffic emissions during the construction phase of the Proposed Development is considered to be not significant, and no additional mitigation is required.

Interim Year Mitigation

8.148 The predicted changes in annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations at all modelled receptor locations are predicted to be negligible in the Interim Year 2033. The predicted changes at all receptors do not lead to any exceedances of the AQS objectives.

8.149 Therefore, the overall predicted effect from road traffic emissions during the operational phase of the Proposed Development on sensitive receptors is considered to be not significant, and no additional mitigation is required.

Completed Development Mitigation

8.150 The predicted changes in annual mean NO_2 concentrations at all modelled receptor locations are predicted to be negligible in Operational Year 2038. The predicted changes at all receptors do not lead to any exceedances of the AQS objectives. Additionally, the predicted effects associated with particulate concentrations (PM_{10} and $PM_{2.5}$) are negligible at all modelled receptor locations, and do not lead to exceedances of the relevant AQS objectives.

8.151 Therefore, the overall predicted effect from road traffic emissions during the operational phase of the Proposed Development on sensitive receptors is considered to be not significant, and no additional mitigation is required.

Residual Effects

8.152 This section identifies and addresses all residual effects, which cannot be eliminated through design changes or the application of standard mitigation measures.

Table 8.18 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Enabling, Demolition and Construction							
Dust effects on human health and amenity receptors up to 250 m from the site boundary. Dust impacts have additionally been assessed at on-site receptors present during peak construction, as a result of phased occupation.	Dust Effects from Enabling and Construction Phase	Negligible	Not Significant	L	D	T	St
The impact of construction phase road traffic emissions has been assessed at existing sensitive receptors along the affected road network.	Construction Phase Road Traffic Emissions	Negligible	Not Significant	L	D	T	St
The impact of construction phase road traffic and partial operation road traffic emissions has been assessed at proposed sensitive receptors along the affected road network.	Construction Phase and Partial Operation Road Traffic Emissions	Negligible	Not Significant	L	D	T	St
Completed Development							
Impact of operational phase road traffic emissions on properties along the affected road network.	Occupational Phase Road Traffic Emissions	Negligible	Not Significant	L	D	P	Lt

Notes:
Residual Effect
- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed

SITE SUITABILITY

8.153 In addition to predicting pollutant concentrations at existing sensitive receptors in the opening year once the Proposed Development is complete and operational, a site suitability test has been undertaken to establish pollutant concentrations at receptors introduced as a result of the Proposed Development.

Interim Year 2033

8.154 Table 8.19 presents the modelled annual mean pollutant concentrations anticipated at receptors introduced as a result of the Proposed Development in Interim Year 2033.

Table 8.19 Annual Mean Pollutant Concentrations With Proposed Development at Introduced Receptors, Interim Year 2033

Receptor ID	Modelled Height (m)	2033 With Proposed Development			
		Annual Mean NO_2 Concentration ($\mu g/m^3$)	Annual Mean PM_{10} Concentration ($\mu g/m^3$)	Annual Mean $PM_{2.5}$ Concentration ($\mu g/m^3$)	No. of Days 24-hour mean PM_{10} >50 $\mu g/m^3$
IR01	1.5	6.7	14.5	6.8	0
IR02	1.5	6.3	13.6	6.5	0
IR03	1.5	6.1	13.6	6.5	0
IR04	1.5	5.7	13.2	6.2	0
IR05	1.5	5.8	13.3	6.3	0
IR06	1.5	6.0	13.9	6.5	0
IR07	1.5	6.6	14.5	6.8	0
IR08_1.57m	1.5	22.3	23.6	12.3	10
IR08_10m	1.5	7.6	14.7	7.0	0
IR08_20m	1.5	16.0	19.5	9.9	3
IR08_30m	1.5	7.4	14.6	6.9	0
IR08_40m	1.5	7.3	14.5	6.8	0
IR08_50m	1.5	7.1	14.5	6.8	0
IR08_60m	1.5	7.0	14.4	6.8	0
IR08_70m	1.5	6.9	14.3	6.7	0
IR08_80m	1.5	6.8	14.3	6.7	0
IR08_90m	1.5	6.7	14.2	6.7	0
IR08_100m	1.5	6.7	14.2	6.6	0
IR08_110m	1.5	6.6	14.2	6.6	0
IR08_120m	1.5	6.5	14.1	6.6	0
IR08_130m	1.5	12.9	17.7	8.7	2
IR08_140m	1.5	11.2	16.7	8.2	1
IR08_150m	1.5	10.1	16.1	7.8	1
IR08_160m	1.5	9.4	15.7	7.6	1
IR08_170m	1.5	8.9	15.4	7.4	1
IR08_180m	1.5	8.4	15.2	7.2	1
IR08_190m	1.5	8.1	15.0	7.1	1
IR08_200m	1.5	7.8	14.8	7.0	1
IR09_0.50m	1.5	22.8	23.3	12.4	9
IR09_10m	1.5	7.6	14.1	6.8	0
IR09_20m	1.5	15.9	18.9	9.7	3
IR09_30m	1.5	7.4	14.0	6.8	0
IR09_40m	1.5	7.2	13.9	6.7	0
IR09_50m	1.5	7.1	13.9	6.7	0
IR09_60m	1.5	7.0	13.8	6.6	0
IR09_70m	1.5	6.9	13.7	6.6	0
IR09_80m	1.5	6.8	13.7	6.6	0
IR09_90m	1.5	6.7	13.6	6.5	0
IR09_100m	1.5	6.6	13.6	6.5	0

Receptor ID	Modelled Height (m)	2033 With Proposed Development			
		Annual Mean NO_2 Concentration (µg/m^3)	Annual Mean PM_{10} Concentration (µg/m^3)	Annual Mean $PM_{2.5}$ Concentration (µg/m^3)	No. of Days 24-hour mean PM_{10} >50 µg/m^3
IR09_110m	1.5	6.6	13.6	6.5	0
IR09_120m	1.5	6.5	13.5	6.5	0
IR09_130m	1.5	12.9	17.1	8.6	1
IR09_140m	1.5	11.2	16.1	8.0	1
IR09_150m	1.5	10.1	15.5	7.7	1
IR09_160m	1.5	9.4	15.1	7.4	1
IR09_170m	1.5	8.8	14.8	7.2	0
IR09_180m	1.5	8.4	14.6	7.1	0
IR09_190m	1.5	8.1	14.4	7.0	0
IR09_200m	1.5	7.8	14.2	6.9	0
IR10	1.5	7.3	15.0	7.0	1

8.155 A maximum predicted annual mean NO_2 concentration of 22.8 µg/m^3 is anticipated. Modelled concentrations at the Proposed Development range from 5.7 µg/m^3 to 22.8 µg/m^3.

8.156 A maximum predicted annual mean PM_{10} concentration of 23.6 µg/m^3 is anticipated. Modelled concentrations at the Proposed Development range from 13.2 µg/m^3 to 23.6 µg/m^3.

8.157 A maximum predicted annual mean $PM_{2.5}$ concentration of 12.4 µg/m^3 is anticipated. Modelled concentrations at the Proposed Development range from 6.2 µg/m^3 to 12.4 µg/m^3.

8.158 Receptors introduced as a result of the Proposed Development are not anticipated to be exposed to pollutant concentrations above the respective objective values. It should be noted the highest pollutant concentrations at potential introduced sensitive receptors which represent the closest distance adjacent to the M11 of the two transects and are therefore considered a conservative 'worst-case'. This is because the Proposed Development's plans are 'outline' and specific locations of sensitive receptors have not been finalised. It is expected the detailed design of the Proposed Development would have residential properties set back further from the road.

8.159 All modelled pollutant concentrations are well below their respective objectives, and there is no requirement for mitigation. The site is considered suitable for intended use in the Interim Year 2033 scenario.

Operational Year 2038

8.160 Table 8.20 presents the modelled annual mean pollutant concentrations anticipated at receptors introduced as a result of the Proposed Development in full Operational Year 2038.

Table 8.20 Annual Mean Pollutant Concentrations With Proposed Development at Introduced Receptors, Operational Year 2038

Receptor ID	Modelled Height (m)	2038 With Proposed Development			
		Annual Mean NO_2 Concentration (µg/m^3)	Annual Mean PM_{10} Concentration (µg/m^3)	Annual Mean $PM_{2.5}$ Concentration (µg/m^3)	No. of Days 24-hour mean PM_{10} >50 µg/m^3
IR01	1.5	5.8	14.3	6.8	0
IR02	1.5	5.4	13.5	6.5	0
IR03	1.5	5.4	13.5	6.5	0
IR04	1.5	5.1	13.0	6.2	0
IR05	1.5	5.2	13.1	6.3	0
IR06	1.5	5.4	13.8	6.5	0
IR07	1.5	5.8	14.5	6.8	0
IR08_1.57m	1.5	16.6	23.7	12.3	10
IR08_10m	1.5	6.4	14.6	7.0	0
IR08_20m	1.5	12.1	19.5	9.9	3
IR08_30m	1.5	6.3	14.5	6.9	0
IR08_40m	1.5	6.2	14.4	6.8	0
IR08_50m	1.5	6.1	14.3	6.8	0
IR08_60m	1.5	6.0	14.2	6.8	0
IR08_70m	1.5	5.9	14.2	6.7	0
IR08_80m	1.5	5.9	14.1	6.7	0
IR08_90m	1.5	5.8	14.1	6.7	0
IR08_100m	1.5	5.8	14.0	6.6	0
IR08_110m	1.5	5.7	14.0	6.6	0
IR08_120m	1.5	5.7	14.0	6.6	0
IR08_130m	1.5	10.0	17.6	8.7	2
IR08_140m	1.5	8.8	16.6	8.2	1
IR08_150m	1.5	8.1	16.0	7.8	1
IR08_160m	1.5	7.6	15.6	7.6	1
IR08_170m	1.5	7.2	15.3	7.4	1
IR08_180m	1.5	7.0	15.0	7.2	1
IR08_190m	1.5	6.7	14.8	7.1	1
IR08_200m	1.5	6.6	14.7	7.0	0
IR09_0.50m	1.5	16.9	23.5	12.4	10
IR09_10m	1.5	6.4	13.9	6.8	0
IR09_20m	1.5	12.0	18.9	9.7	3
IR09_30m	1.5	6.2	13.8	6.8	0
IR09_40m	1.5	6.1	13.7	6.7	0
IR09_50m	1.5	6.0	13.7	6.7	0
IR09_60m	1.5	5.9	13.6	6.6	0
IR09_70m	1.5	5.9	13.5	6.6	0
IR09_80m	1.5	5.8	13.5	6.6	0
IR09_90m	1.5	5.8	13.4	6.5	0
IR09_100m	1.5	5.7	13.4	6.5	0
IR09_110m	1.5	5.7	13.4	6.5	0
IR09_120m	1.5	5.6	13.3	6.5	0
IR09_130m	1.5	9.9	17.0	8.6	1
IR09_140m	1.5	8.8	16.0	8.0	1
IR09_150m	1.5	8.1	15.4	7.7	1

Receptor ID	Modelled Height (m)	2038 With Proposed Development			
		Annual Mean NO_2 Concentration ($\mu g/m^3$)	Annual Mean PM_{10} Concentration ($\mu g/m^3$)	Annual Mean $PM_{2.5}$ Concentration ($\mu g/m^3$)	No. of Days 24-hour mean PM_{10} >50 $\mu g/m^3$
IR09_160m	1.5	7.6	15.0	7.4	1
IR09_170m	1.5	7.2	14.6	7.2	0
IR09_180m	1.5	6.9	14.4	7.1	0
IR09_190m	1.5	6.7	14.2	7.0	0
IR09_200m	1.5	6.5	14.1	6.9	0
IR10	1.5	6.3	15.1	7.0	1

8.161 A maximum predicted annual mean NO_2 concentration of 16.9 $\mu g/m^3$ is anticipated. Modelled concentrations at the Proposed Development range from 5.1 $\mu g/m^3$ to 16.9 $\mu g/m^3$.

8.162 A maximum predicted annual mean PM_{10} concentration of 23.7 $\mu g/m^3$ is anticipated. Modelled concentrations at the Proposed Development range from 13.0 $\mu g/m^3$ to 23.7 $\mu g/m^3$.

8.163 A maximum predicted annual mean $PM_{2.5}$ concentration of 12.4 $\mu g/m^3$ is anticipated. Modelled concentrations at the Proposed Development range from 6.2 $\mu g/m^3$ to 12.4 $\mu g/m^3$.

8.164 Receptors introduced as a result of the Proposed Development are not anticipated to be exposed to pollutant concentrations above the respective objective values. It should be noted the highest pollutant concentrations at potential introduced sensitive receptors which represent the closest distance adjacent to the M11 of the two transects and are therefore considered a conservative 'worst-case'. This is because the Proposed Development's plans are 'outline' and specific locations of sensitive receptors have not been finalised. It is expected the detailed design of the Proposed Development would have residential properties setback further from the road.

8.165 All modelled pollutant concentrations are well below their respective objectives, and there is no requirement for mitigation. The site is considered suitable for intended use in the full Operational Year 2038 scenario

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

8.166 NO_2, PM_{10} and $PM_{2.5}$ concentrations are expected to decrease and improve overtime due to improvements in vehicle fleets. This can be seen in the Defra Background Mapped displayed in Table 8.8.

8.167 In addition, predicted baseline concentrations at Existing Receptors from the model are displayed for 2027, 2033 and 2038 in Table 8.21, and are as presented above as the 'Without' Proposed Development scenarios in Table 8.12, Table 8.14 and Table 8.16.

Table 8.21 Modelled Future Baseline Pollutants at Existing Receptors

ID	2027			2033			2038		
	NO_2	PM_{10}	$PM_{2.5}$	NO_2	PM_{10}	$PM_{2.5}$	NO_2	PM_{10}	$PM_{2.5}$
R01	12.9	14.1	8.0	8.9	13.6	7.5	8.0	13.9	7.6
R02	9.6	13.3	7.0	6.9	12.8	6.6	6.3	12.9	6.5
R03	14.3	13.7	7.6	9.9	13.2	7.2	8.8	13.3	7.1
R04	11.7	13.6	7.7	8.3	13.1	7.3	7.6	13.3	7.2
R05	10.6	13.7	7.2	7.2	13.2	6.8	6.2	12.9	6.6
R06	13.5	14.4	8.1	9.1	13.8	7.7	7.8	13.5	7.4
R07	15.0	15.1	8.5	9.8	14.5	8.0	8.3	14.2	7.7
R08	14.1	14.6	8.2	9.4	14.0	7.8	8.1	13.7	7.5
R09	15.1	15.2	8.5	9.8	14.6	8.1	8.1	14.2	7.8
R10	11.2	13.4	7.6	8.1	12.9	7.2	7.2	12.6	6.9
R11	13.5	15.1	7.9	8.3	14.6	7.5	6.7	14.3	7.3
R12	11.1	14.0	7.4	7.3	13.5	6.9	6.1	13.3	6.7
R13	9.3	13.2	6.9	6.5	12.8	6.5	5.6	12.5	6.3
R14	9.5	14.3	7.0	6.4	13.9	6.6	5.5	13.8	6.5
R15	8.6	14.5	6.9	6.1	14.1	6.5	5.4	13.9	6.4
R16	13.7	13.4	7.5	9.6	12.9	7.0	8.5	12.9	6.9
R17	10.0	13.5	7.1	6.8	13.1	6.7	5.8	12.8	6.4
R18	11.8	14.2	7.5	7.8	13.7	7.1	6.5	13.4	6.8
R19	10.0	13.5	7.1	6.8	13.1	6.7	5.8	12.8	6.4
R20	10.2	13.6	7.1	6.8	13.1	6.7	5.8	12.9	6.5
R21	11.1	14.0	7.4	7.2	13.5	6.9	6.1	13.2	6.7
R22	10.8	13.8	7.3	7.4	13.3	6.9	6.7	13.6	6.9
R23	12.1	14.3	7.6	8.0	13.8	7.1	7.1	14.3	7.3
R24	10.0	13.4	7.1	7.0	12.9	6.7	6.4	13.1	6.7
R25	11.3	15.2	7.5	7.2	14.7	7.1	6.0	14.6	6.9
R26	9.1	14.7	7.0	6.3	14.3	6.6	5.5	14.1	6.5
R27	8.5	13.9	6.8	6.0	13.5	6.4	5.3	13.3	6.2
R28	9.5	14.3	7.0	6.4	13.8	6.6	5.5	13.8	6.5
R29	9.2	14.7	7.0	6.4	14.3	6.6	5.5	14.2	6.5
R30	8.8	12.9	6.6	6.1	12.5	6.2	5.3	12.3	6.1
R31	10.1	14.5	7.1	6.6	14.1	6.7	5.7	14.0	6.6
R32	11.2	13.4	7.6	8.1	12.9	7.2	7.2	12.6	6.9
R33	12.8	14.1	7.9	8.8	13.5	7.5	7.8	13.5	7.3
R34	13.4	14.3	8.1	9.1	13.8	7.6	7.9	13.6	7.4
R35	12.2	13.8	7.8	8.6	13.3	7.4	7.5	13.1	7.1
R36	11.5	13.5	7.7	8.2	13.0	7.2	7.3	12.8	7.0

Cumulative Effects Assessment

8.168 This section of the chapter assesses the potential effects of the Proposed Development in combination with the potential effects of other development schemes (referred to as 'cumulative developments') within the surrounding area, as listed within **ES Volume 1, Chapter 2: EIA Methodology**.

Enabling, Demolition and Construction

8.169 With regards to dust generation during the construction phase, best practice measures will be employed to ensure that no off-site nuisance occurs. Assuming that all schemes under construction at the same time in the vicinity of the Proposed Development operate to the same standard, no cumulative effects are anticipated.

8.170 In terms of construction-phase road traffic emissions, assessment has considered a worst-case scenario for construction phase traffic generation. Impacts at all modelled receptors have been deemed negligible in accordance with EPUK and IAQM criteria. Whilst there is a possibility of increased congestion as a result of the cumulative impact of construction phase traffic generation from other schemes in the area, it would be expected that communication between major developers in the area would be undertaken to ensure that congestion due to HGV traffic is kept to a minimum. Reference should also be made to **ES Volume 1, Chapter 7: Traffic and Movement** for the basis of the relevant traffic numbers used in this assessment.

Completed Development

8.171 This assessment has considered a worst-case scenario for road traffic which incorporates traffic from the approved cumulative developments into the baseline scenario. Impacts at all modelled receptors have been deemed negligible in accordance with EPUK and IAQM criteria. It is therefore highly unlikely that, in combination with other schemes (which are also likely to include all electric energy strategies) , significant adverse impacts would occur.

LIKELY SIGNIFICANT EFFECTS

8.172 Overall, the Proposed Development is not anticipated to result in any significant effects on local air quality. The risk of air quality impacts from construction dust is considered negligible, and not significant, on the basis appropriate mitigation in implemented. The air quality impact from construction traffic and operational traffic is not significant in the Interim Year 2033 and Operational Year 2038.

Chapter 9: Noise and Vibration

TRIUM

NOISE AND VIBRATION	
AUTHOR	Trium Environmental Consulting LLP
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Noise and Vibration** Annex 1: Legislation, Planning Policy and Other Relevant Standard and Guidance; Annex 2: Glossary; Annex 3: Environmental Noise Survey Report; Annex 4: Construction Plant Assumptions; and Annex 5: Demolition, Enabling and Construction Noise Prediction Images.
KEY CONSIDERATIONS	The following are the key acoustic considerations which have been assessed in this ES chapter: • Construction noise - airborne noise from machinery and the works themselves; • Construction vibration - ground-borne vibration from machinery and the works themselves; • Construction traffic - noise from construction vehicles; • Completed Proposed Development road traffic noise; • Completed Proposed Development sports and recreation noise; • Completed Proposed Development building services noise; and • Site Suitability. Vibration measurements were scoped out, as the site is sufficiently far from potential sources of vibration, i.e. train lines.
CONSULTATION	An EIA Scoping Report was prepared and submitted to Greater Cambridge Shared Planning Service (GCSPS) in November 2024 (**ES Volume 3, Appendix: EIA Methodology – Annex 1**). An EIA Scoping Opinion was subsequently received on 23 January 2025 and is included within **ES Volume 3, Appendix: EIA Methodology – Annex 2**. This generally agreed with the scope of this ES chapter. Initial contact with GCSPS was made via email on 28 August 2024. The email briefly described the Key Considerations and described our approach to baseline noise monitoring. A response to this email was received on 11 September 2024, which noted it "*seems generally acceptable*". One comment was made on the position of noise monitoring towards the south of the site, which the monitoring at position 4 is intended. A specific noise and vibration meeting was held with GSCPS on 30 January 2025. During the meeting the survey methodology and results were discussed. The officers from GCSPS did not express any concerns with the approach described. Discussions were held on how the assessments were going to be completed and the outcomes that were observed from the initial site suitability studies. It was understood from these meetings that the officers were generally happy with the approaches that are described in this ES chapter.

ASSESSMENT METHODOLOGY

Basis of Assessment

9.1 The Applicant is seeking outline planning permission (all matters reserved except for means of access to the public highway) for the Proposed Development (refer to **ES Volume 1, Chapter 2: EIA Methodology** for further information).

9.2 The Proposed Development comprises up to 3,800 new residential units, student accommodation, co-living and senior living accommodation, and a mix of non-residential uses, likely to include: retail, food and beverage, education, nursery, and health floorspace, with associated servicing facilities, parking, plant space, open space and landscaping. New roads will be built, including a central spine (Cartwright Avenue), with the existing highways network reconfigured, including realignments and junction improvements.

9.3 Residential uses are proposed for Plots B2 (part), C1, C2, D1, D2, E1, E2, F1, F2, F3, G, H1, H2, H3 and J. Refer to **ES Volume 1, Chapter 4: Proposed Development** and Figure 9.2 for plot locations.

9.4 Non-residential uses buildings are proposed on Plots A, B2 (part) and J. Plot B1 will be used for recreation, e.g. BMX track and allotments. Refer to **ES Volume 1, Chapter 4: Proposed Development** and Figure 9.2 for plot locations. The non-residential uses are limited to Use Class E, academic floor space (Use Class F1) and Sui Generis Research Uses. The noise emissions from these uses will typically be limited to noise generated by building services plant and servicing (vehicles on the road).

9.5 The assessments contained within the ES chapter concentrates on the reasonable worst-case potential effects experienced at the receptors surrounding the site, while also considering the potential suitability of the site for future occupants.

9.6 When considering potential enabling, demolition and construction effects, the illustrative construction programme presented in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**, Illustrative Masterplan, maximum parameter plans and Design Code have been referenced.

9.7 The worst-case operational noise and vibration impacts at the existing surrounding receptors will relate to the changes in road traffic and the introduction of new sports pitches.

9.8 Residential occupants are typically highly sensitive to noise and vibration. As the site is to be developed to include residential buildings it has been necessary to consider the potential noise and vibration receptors that would exist. The assessments relating to these introduced receptors concentrate on the suitability of the site for residential uses.

9.9 The noise emitted from the operational building services plant would need to be controlled. As such, the effects, limits and mitigation measures listed within the ES chapter for plant noise are to be adopted.

Defining the Baseline

Baseline Conditions

9.10 Environmental noise and vibration surveys were conducted between 17 September 2024 and 1 October 2024 to establish the baseline conditions around the site and at key receptor locations surrounding the site (see section '*Receptors and Receptor Sensitivity*' of this ES chapter).

9.11 The receptor locations are representative of other potential receptors further away from the site; if noise levels are not deemed significant at these receptors, then receptors located at a further distance from the site would also not be significantly affected.

Survey Methodologies

9.12 Noise surveys have been undertaken in line with guidance contained in BS 7445:2003[1] and BS 4142:2014[2].

Unattended Noise Monitoring

9.13 Continuous noise surveys were undertaken at four positions to determine the existing noise levels across the site. The long-term unattended noise monitoring locations are shown in Figure 9.1 denoted by '1', '2', '3' and '4'. Measurements were conducted between 17 September 2024 and 22 September at Position 1, between 17 September 2024 and 24 September at Positions 2 and 3 and between 24 September 2024 and 1 October 2024 at position '4'. The dominant noise source identified during the baseline surveys was road traffic (distant and close). A summary of the long-term environmental noise results is provided within the '*Baseline Conditions'* section of this ES chapter. Full details of the methodology and results of the environmental noise surveys are presented **ES Volume 3, Appendix: Noise and Vibration – Annex 3.**

Attended Noise Monitoring

9.14 15-minute noise surveys were undertaken at four positions to determine the existing noise levels across the site. The short-term attended noise monitoring locations are shown in Figure 9.1, denoted by '5', '6', '7' and '8'.

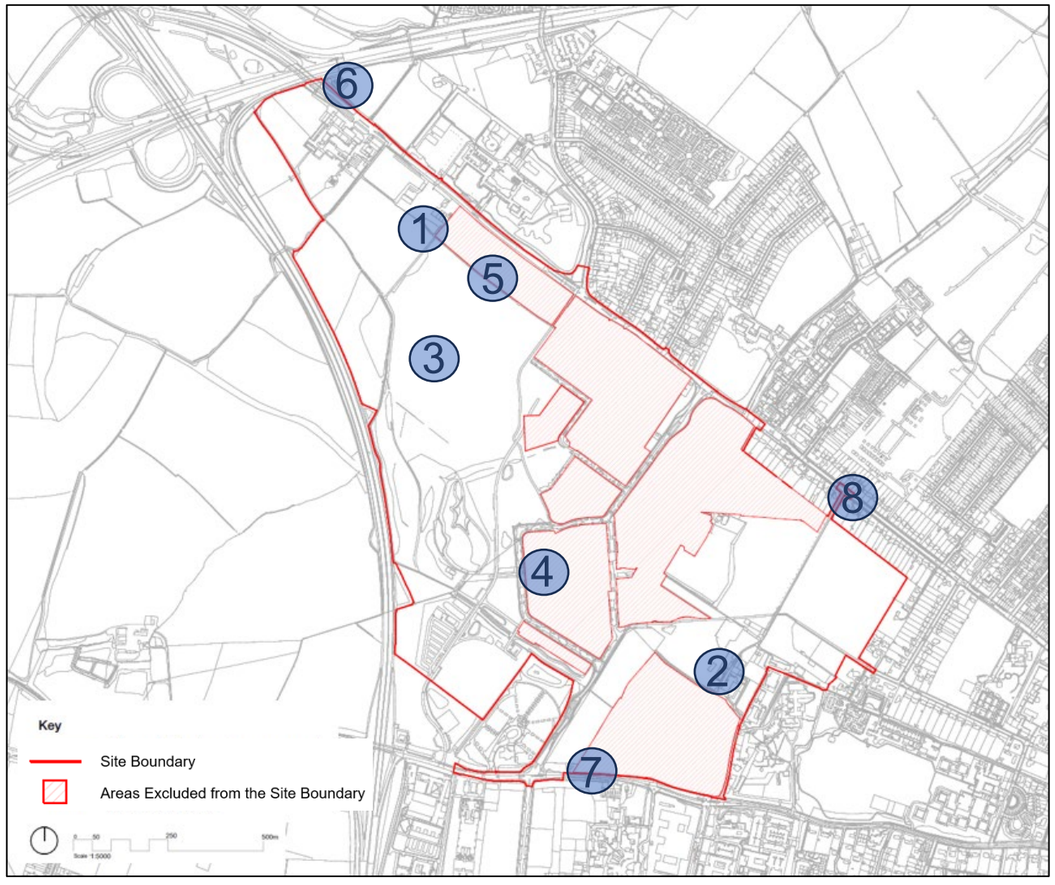
[1] *British Standards (BS) 7445:2003 Description and measurement of environmental noise, December 2003*

[2] *British Standards (BS) 4142:2014: +A1:2019 Method for rating and assessing industrial and commercial sound, October 2014*

Measurements were conducted on 17 September 2024 at Positions 5, 6 and 7, and on 24 September 2024 at position 8.

9.15 The dominant noise sources identified during the baseline surveys included road traffic. A summary of the short-term environmental noise results is provided within the '*Baseline Conditions'* section of this ES chapter. Full details of the methodology and results of the environmental noise surveys are presented **ES Volume 3, Appendix: Noise and Vibration – Annex 3**.

Figure 9.1 Measurement Positions[3]



Evolution of the Baseline

9.16 The EIA Regulations[4] require that the likely evolution of the baseline is considered in the event that the Proposed Development were not to come forward. In other words, the likely effect on the existing baseline conditions if the relevant cumulative schemes (as listed in **ES Volume 1**, **Chapter 2: EIA Methodology**, and **ES Volume 3, Appendix: EIA Methodology – Annex 4**) were to come forward in the absence of the Proposed Development.

9.17 Potential changes to the existing road traffic flows are considered to have the biggest potential to affect the future baseline at the site and the surrounding receptors.

9.18 The noise generated by road traffic from the M11 is notable across the site depending on wind direction. Given the high existing sound levels there would need to be a significant change (e.g. one way system/ removal of the carriage way or multiple lane extensions) for changes in the baseline to occur.

Impact Assessment Methodology

9.19 The study area for the assessment is defined by the location of surrounding receptors and the end use of the Proposed Development. Receptors are outlined within the '*Receptors and Receptor Sensitivity*' section of this ES chapter.

9.20 This section presents the methodology used to assess each type of noise and vibration impact, in terms of the application of relevant standards and guidance, along with the types of data and analysis carried out.

9.21 The assessment considers the following types of noise and vibration:

- Construction noise – airborne noise from machinery and the works themselves;
- Construction vibration – ground-borne vibration from machinery and the works themselves;
- Construction traffic – noise from construction vehicles;
- Completed Proposed Development building services noise;
- Completed Proposed Development traffic noise;
- Completed Proposed Development sports and recreation noise; and
- Site suitability.

9.22 Operational noise from Use Class E/F/Sui Generis uses on-site have been evaluated in paragraphs 9.69 to 9.73.

9.23 The traffic flows for all links are included **ES Volume 3, Appendix: Traffic and Movement – Annex 1** have been applied in the noise assessments.

Outline Planning Application

9.24 The maximum parameter plan has been used to inform the likely piling location for evaluating vibration during construction. Plots showing buildings that are 4 stories and higher have been assumed may include piling.

9.25 The parameter plot drawings have been referenced in the calculation of construction noise emissions. The calculations have been based on the noise emitting from the centre of the plots, to reflect an average position.

9.26 The traffic flows evaluated are based on the maximum parameters, i.e. the highest number of vehicles that could come forward. This is a reasonable worst-case assumption as it would represent the largest potential change in existing road traffic and therefore noise level.

9.27 The assessment of the remainder of the masterplan of the Proposed Development has been based on the Illustrative Masterplan.

Illustrative Masterplan

9.28 The Illustrative Masterplan has been used for the following purposes:

- While the maximum parameters have been used to derive the traffic volumes, the Illustrative Masterplan massing has been applied within the interim and fully operational scenarios, so that calculations consider the likely screening and reflections that will be present;
- To complete the second stage of the site suitability assessment, i.e. to outline the type of mitigation measures that may be required to be secured by a planning condition; and

[3] *Note, site boundary shown is approximate for demonstrating the location of the site only.*

[4] *Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations, 2020*

- Undertake evaluation of sound from the sports pitches, with the location of the pitches and the massing of the Proposed Development.

Enabling, Demolition and Construction

9.29 The enabling and construction programme is anticipated to be undertaken over the course of approximately 10 years. The noise and vibration assessment has been undertaken in line with the details of the proposed enabling and construction works, as set out in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction** and **ES Volume 3, Appendix: Noise and Vibration – Annex 4**.

9.30 Noise egress has been calculated based on the methodology outlined in BS 5228-1:2009[5]. Where specific sound power levels have not been provided, reference has been made to the operational noise levels for various items of plant that are included within this standard. The operational plant noise levels have been used to determine a representative equivalent continuous sound level (L_{Aeq}) associated with the construction activity. The construction plant noise assumptions are set out in **ES Volume 3, Appendix: Noise and Vibration – Annex 4.**

9.31 A 3D noise model has been created to determine the predicted noise level associated with the enabling and construction works at the surrounding noise sensitive receptors.

9.32 Noise levels associated with the enabling, demolition and construction of the Proposed Development have been predicted at each of the noise sensitive locations and these levels have been compared with the guidelines highlighted in BS 5228-1, to determine the magnitude of impact. This has been referenced against the sensitivity of each receptor to determine the scale of effect.

9.33 No mitigation has been included in the modelling, i.e. no screening or site hoardings. This represents a worst-case when the sites are entirely open. The duration of the impacts is likely to be reduced or only occur for specific periods.

9.34 Plots will include traditional houses, where excavation and other ground works will likely be noisiest activities. In addition, piling will likely be required for the construction of the apartments, commercial and student residential buildings that are proposed in each phase. The location of the buildings that are more likely to require piled foundations have been selected through considering the maximum parameters (i.e. buildings with an AOD of 35m or more).

9.35 For simplicity, the modelling of the noise emissions from the excavation/ground works has been assumed to be located within the centre of the phase (i.e. as a single point source). This presents a reasonable assumption for a site of this size, whereby distances between receptors is relatively high and plant will be mobile. Whilst it is possible that equipment may operate at shorter distances to a receptor, this would only occur within the short term.

9.36 The modelling of each phase includes the occupation of the previously built phases.

9.37 The construction assumptions applied are a reasonable worst-case given they are based on simultaneous construction activities across multiple plots and include high proportion of on-times for machinery / plant. No mitigation, such as perimeter hoardings, have been assumed.

Phasing

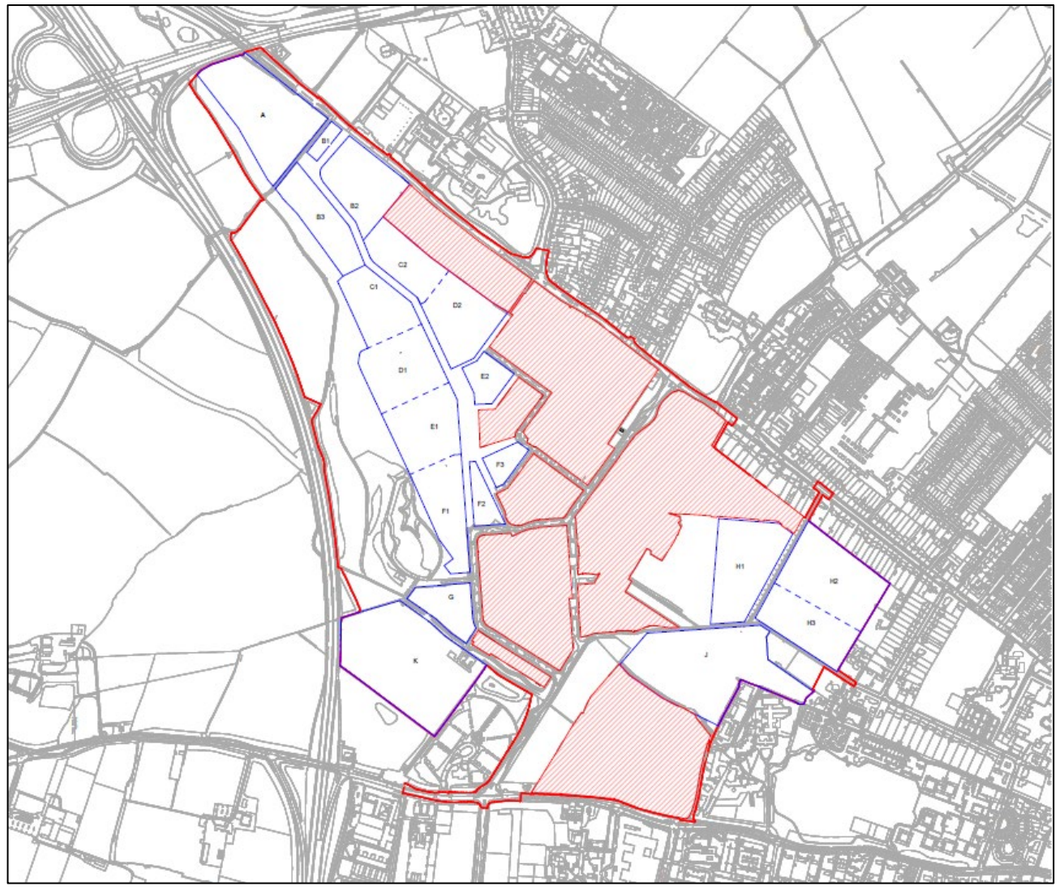
9.38 The phasing of the Proposed Development has been considered with respect to the potential for effects during the enabling, demolition and construction works, and to evaluate the potential implications on-site suitability.

9.39 The phasing of the Proposed Development is as follows:

- Phase 2A (Plots F2, F3 and G) – Q2 2027 to Q2 2029;
- Phase 2B (Plots E1, E2 and F1) – Q4 2028 to Q1 2032;
- Phase 2C (Plots C1, D1 and D2) – Q4 2030 to Q4 2033;
- Phase 3 (Plots A, B1, B2 and C2) – Q4 2032 to Q1 2035; and
- Phase 4 (Plots J, H1, H2 and H3) – Q3 2032 to Q1 2037.

9.40 Figure 9.2 illustrates the indicative location of each of the plots.

Figure 9.2 Plot Locations (Illustrative)



Construction Timeslices

9.41 Construction of the plots of the Proposed Development overlap, as illustrated on the indicative demolition and construction programme shown on Figure 5.2 within **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**. Due to the overlapping activities, in order to ensure that periods of peak activity (particularly noisy activities) and the introduction of sensitive receptors on site as a result of the phased build out and occupation of the Proposed Development are taken into consideration, six 'timeslices' across the indicative works programme have been identified and assessed.

[5] *British Standards (BS) 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction sites – Part 1: Noise, February 2014*

9.42 These timeslices represent points throughout the indicative works programme where there are concurrent construction activities taking place across locations of the Proposed Development and represent periods of peak activity.

9.43 The timeslices are described below:

- Timeslice 1:
  - 2027 Q2;
  - No buildings of the Proposed Development will be occupied at this stage; and
  - Earthworks for Phases 2 and 3, Huntingdon Road Junction, Cartwright Avenue Construction and on-plot works at Plots F2 and F3.
- Timeslice 2:
  - 2029 Q2;
  - Plots F2 and F3 are occupied; and
  - On-plot works at Plots F1, E1 and E2 (Phase 2B).
- Timeslice 3:
  - 2030 Q4;
  - Phase 2A (Plots F2, F3 and G) are occupied; and
  - On-plot works at D1, D2 and C1 (Phase 2C).
- Timeslice 4:
  - 2031 Q4;
  - Phase 2A and Plots F1 and E2 buildings will be occupied; and
  - Earthworks on Phase 4 and demolition of Plot A.
- Timeslice 5:
  - 2032 Q3;
  - Phase 2A and 2B are occupied; and
  - On-plot works at Plot J1.
- Timeslice 6:
  - 2033 Q3;
  - Phase 2A, 2B and plots D2 and C1 are occupied; and
  - On-plot works at C2, B2, A, J2, H1, H2 and H3.

9.44 The assessment of timeslices ensures that any peaks in activity that would result in peaks in construction and demolition noise are adequately assessed.

9.45 The assessment in Timeslices 2, 3, 4, 5 and 6 assume that the land profiling (removing of Phase 1 stockpiles) has been completed, with the soil distribute to the western edge of the site (Brook Leys) or removed from the site.

Construction Traffic

9.46 The assessment of traffic noise effects is based on the Department for Transport Welsh Office Calculation of Road Traffic Noise 1988 (CRTN) [6] and Volume 11 of the Design Manual for Roads and Bridges (DMRB) [7] using traffic data predicted in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**.

9.47 For construction road traffic effects along roads during the construction of the Proposed Development, consideration has been given to the 18-hour Average Annual Weekday Traffic (AAWT) flows. The following scenarios have been assessed:

- Future Baseline Do Nothing 2027 Baseline; and
- Year 2027 Proposed Development (commencement of construction).

9.48 During construction traffic evaluations it has been assumed that the land profiling (removing of Phase 1 stockpiles) has been completed, with the soil redistributed to the western edge of the site (Brook Leys) and removed from the site.

Completed Development

Building Services (Plant) Noise and Commercial Noise

9.49 Noise levels from building services plant associated with the completed Proposed Development would need to be controlled to ensure that it would not have an impact on nearby noise sensitive receptors relative to the lowest background sound level.

9.50 Limiting noise levels for the building services and commercial noise associated with the Proposed Development have been based on the guidance and assessment methodology outlined in BS 4142.

Operational Traffic Noise

9.51 The assessment of traffic noise effects along existing roads is based on the Department of Transport Welsh Office 1988 CRTN and DMRB using traffic data generated by the Applicant's Transport Consultants, KMC Transport Planning.

9.52 For road traffic effects along existing roads once the Proposed Development is complete and operational, consideration has been given to the 18-hour Average Annual Weekday Traffic (AAWT) flows. The following scenarios have been assessed:

- Future Baseline Do Nothing 2033 Baseline;
- Year 2033 Proposed Development (construction + Phase 2);
- Future Baseline Do Nothing 2038 Baseline; and
- Year 2038 Proposed Development (full opening).

9.53 During the 2033 evaluations the buildings within Phase 2A (Plots F2, F3 and G), Phase 2B (Plots F1, E1 and E2) and Plots D2 and C1 are assumed to be present. The Illustrative Masterplan has been used to inform the location of the buildings.

9.54 The operational traffic evaluation has been based on the assumption that all buildings within the Proposed Development are built. The Illustrative Masterplan has been used to inform the evaluations.

9.55 The results from the model have been used to assess the likely change in ambient sound pressure levels at receptors outside the site, as noise impacts on the future occupants is evaluated as part of the site suitability assessments.

Sports and Recreation Noise Emissions

9.56 Sports and recreational uses are shown in the following locations within the Illustrative Masterplan, as described in **ES Volume 1, Chapter 4: The Proposed Development**:

- Amenity Cluster C: 3 x 3G pitches and 5 x tennis courts; and
- Amenity Cluster D: BMX track.

[6] *Department for Transport Welsh Office (1988) Calculation of Road Traffic Noise (CRTN)*

[7] *Department for Transport Highways Agency Design Manual for Roads and Bridges: LA 111 – Noise and vibration, May 2020 (DMRB)*

9.57 Noise levels from the outdoor sports pitches associated with the Proposed Development are assessed with reference to Sports England Guidance[8]. The document contains information on the noise implications with outdoor sports pitches. The guide states the free-field noise level of $L_{Aeq,1h}$ 58 dB was measured 10m from the sideline halfway marking. The dominant noise source are voices, rather than other noise sources, i.e. ball impacts.

9.58 The guidance illustrates how to model the sports pitches, which would be to assume an area source covering the sports pitches shown within the Illustrative Masterplan. This approach has been taken with the Proposed Development.

9.59 The guide states noise levels above $L_{Aeq,1h}$ 50 dB at residential receptors may result 'moderate annoyance' during the day and evening, i.e. exceeds the World Health Organisation's (WHO) guidelines for Community Noise[9]. This has been taken to represent the level where significant effects are expected to occur, or where the change in noise level exceeds 3 dBA, as per IEMA/IOA.

9.60 There is no reliable guidance on noise emissions from tennis courts or BMX tracks. The noise emissions from tennis courts has been considered to be negligible in comparison to the potential emissions from the adjacent 3G pitches. On this basis no noise contribution has been assigned to tennis courts within Amenity Cluster C.

9.61 The noise emission from the BMX track has been reviewed separately by evaluating the likely impact caused by a person shouting[10].

9.62 The assessments present a likely worst-case scenario when all amenity spaces are used at the same time and with peak noise emissions.

Assumptions and Limitations

Enabling, Demolition and Construction Works

9.63 It is assumed that trade contractors will comply with all legislation relevant to the control of noise from construction works including:

- The Control of Pollution Act 1974 (COPA) with particular reference to part III[11];
- The Environmental Protection Act 1990[12];
- The Control of Noise at Work Regulations 2005[13]; and
- The Health and Safety at Work Act 1974[14].

9.64 The predictions of potential demolition and construction noise effects have assumed the following:

- Construction plant that is compliant with the sound levels published within BS 5288; and
- The equipment and operating hours assumed for the assessments contained herein are provided in **ES Volume 3, Appendix: Noise and Vibration – Annex 4.**

9.65 The eventual selected equipment and precise enabling and construction methodology would be dependent on the contractor selected for the works. Conservative, worst-case assumptions have therefore been made with regard to operations and activities, and the associated plant and equipment to be used, and site access locations as presented **ES Volume 1, Chapter 5: Enabling, Demolition and Construction.** Therefore, the predicted enabling works and construction noise and vibration levels represent an upper estimate or worst-case scenario of emissions from the site during the works.

9.66 The emphasis of the construction assessment focuses on the noisiest phases of work, which are likely to arise from the ground works, and where appropriate piling, activities within each phase.

9.67 The equipment and operating hours assumed for the assessments contained herein are provided in **ES Volume 3, Appendix: Noise and Vibration – Annex 4.** Construction works are not considered after the Proposed Development is fully completed and operational.

Operational and Site Suitability

Building Services (Plant) Noise

9.68 Noise levels from building services plant associated with the Proposed Development will be controlled to ensure that it would not have an effect on nearby noise sensitive premises Criteria for the assessment are set in accordance with BS 4142[15].

9.69 The baseline noise levels recorded at positions representative of the locations of sensitive receptors surrounding the Proposed Development have been used to set noise limits for the building services plant.

Operational Traffic Noise

9.70 The operational traffic noise evaluations have used the Illustrative Masterplan layouts and massing. With the traffic flows based on the maximum parameters, i.e. the highest number of introduced vehicles on the roads.

9.71 This is considered to be a reasonable worst-case evaluation, with the Proposed Development buildings occupied and the highest predicted vehicles on the roads that provide the highest change in sound level.

Operation of Non-Residential Units

9.72 Employment areas, which would include non-residential units, are proposed in Plot A and B1. Academic uses (non-residential) are proposed in Plot J. The academic uses (Use Class F1) would not produce noise emissions beyond those associated with building services plant.

9.73 The non-residential uses in Plot A and Plot B1 may include retail, nursery, health, indoor sports, offices (academic) and research and development uses (i.e. Sui Generis and Use Class E(a to g)).

9.74 Activity noise emissions from non-residential uses cannot be feasibly assessed without knowledge of the proposed end use and how they operate. Nevertheless, in most cases, Use Class E uses would rarely exceed an internal noise level of L_{Aeq} 65 dB (e.g. cafe, shop, office, research and development etc).

9.75 With any hermitically sealed and thermally rated glazed façade, the sound pressure levels predicted at the closest proposed residential facades have been calculated to be approximately L_{Aeq} 20dB. These are below the currently measured ambient sound levels across the site.

9.76 The noise emissions from Use Class E are sufficiently low so that it would unlikely be distinguishable with respect to the residual ambient sound pressure levels. Typical lease clauses or licensing conditions would be appropriate to limit noise emissions associated with these uses. Accordingly, further evaluation has not been completed.

Site Suitability

9.77 The site suitability has been based on the illustrative masterplan layout and massing. The assessment of site suitability has been based on the highest measured sound levels, i.e. the worst-case in terms of site suitability.

[8] *Sport England, Artificial Grass Pitch (APG) Acoustics – Planning Implications, August 2015*
[9] *The World Health Organisation (WHO) 'Guidelines for Community Noise, 1999*
[10] *Sound Pressure Level of 80dBA at 1m as per guidance from Building Bulletin 93*
[11] *Control of the Pollution Act 1974 (COPA)*
[12] *Environmental Protection Act 1990*
[13] *The Control of Noise at Work Regulations 2005*
[14] *The Health and Safety at Work Act 1974*
[15] *British Standards (BS) 4142:2014 Method for rating and assessing industrial and commercial sound, October 2014*

Methodology for Defining Effects

9.78 The scale and significance of an effect are derived from the magnitude of the impact and the sensitivity of the affected receptor.

Receptors and Receptor Sensitivity

9.79 Table 9.1 summarises the sensitivity of various receptors, including use types relevant to the Proposed Development, and other uses for context, which is based on a mixture of professional experience and industry standards.

Table 9.1 Receptor Sensitivity

Sensitivity of Receptor	Description
High	Residential, Residential Colleges and Primary Schools
Medium	Hotels, Colleges (non-residential) and Research Centres (including UN Environment World Conservation Monitoring Centre)
Low	Retail and Office

9.80 Although there are other noise sensitive receptors located at greater distance, it is considered that controlling noise egress at the closest properties will result in acceptable noise levels at all other noise sensitive premises.

9.81 In any instances where the noise impact cannot be mitigated to an acceptable level at the nearest noise sensitive receptors, consideration will be given to the impact on receptors at greater separation distances.

Magnitude of Impact

Enabling, Demolition and Construction Works Noise

9.82 BS 5228 provides practical information on demolition and construction noise and vibration reduction measures and promotes a 'Best Practicable Means' approach to control noise and vibration. The calculation method provided in BS 5228 is based on the number and types of equipment operating, their associated Sound Power Level (SPL), and the distance to receptors, together with the effects of any screening.

9.83 Magnitude of impact for construction plant noise are based on the 'ABC' methodology set out in BS 5228-1, which aligns thresholds of significant construction noise with respect to the existing ambient noise levels. These thresholds are presented in Table 9.2 and represent noise levels measured at the façade of each building.

Table 9.2 Demolition and Construction Works Noise – Magnitude of Impact

Magnitude of impact	Daytime Construction Noise Levels[16]
Very Low	Less than $L_{Aeq,12h}$ 60 dB
Low	Between $L_{Aeq,12h}$ 60-65 dB
Medium	Between $L_{Aeq,12h}$ 66-70 dB
High	Greater than $L_{Aeq,12h}$ 70 dB

Enabling, Demolition and Construction Vibration

9.84 BS 5228-2 provides guidance on the perception of vibration within occupied buildings. This provides a simple method of assessing annoyance associated with vibration.

9.85 Table 9.3 details Peak Particle Velocity (PPV) levels and their potential effect on humans and provides a semantic scale for description of demolition and construction vibration impacts on human receptors.

Table 9.3 Peak Particle Velocity (PPV) Levels – Impact on Humans (Annoyance)

Magnitude of Impact Category	Peak Particle Velocity Level	Description
Very Low	≤0.30 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
Low	0.30 – 1.0 mm/s	Vibration might be just perceptible in residential environments.
Medium	1.0 – 10.0 mm/s	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.
High	>10.0 mm/s	Vibration is likely to be intolerable for any more than a very brief exposure to this level.

9.86 Levels of vibration required for cosmetic damage are far higher than those that would result in an unacceptable impact in terms of annoyance and, as such, are not presented or assessed in this assessment.

Sports and Recreation Noise

9.87 Noise levels from the outdoor sports pitches associated with the Proposed Development are to be assessed with reference to Sports England, WHO and IOA/IEMA 'Guidelines for Noise Impact Assessment'[17] guidance, as per Table 9.4.

Table 9.4 Magnitude of Impact – Outdoor Sports Pitch Emissions

Magnitude of Impact	Criteria	Description
Very Low	Change in ambient sound level is less than 1.0 dBA, Or Absolute ambient sound level is less than LAeq,1h 45 dB	Increase in ambient sound level is unlikely to be discernible, or Absolute ambient sound level is 5 dB below Sports England guidance for avoiding moderate annoyance
Low	Change in ambient sound level is 1.0-2.9 dBA, Or Absolute ambient sound level is LAeq,1h 45-49 dB	A slight increase in ambient sound level may be perceived in affected buildings and outdoor recreational areas, or Absolute ambient sound level complies with Sport England guidance for avoiding moderate annoyance
Medium	Change in ambient sound level is 3.0-5.0 dBA, Or Absolute ambient sound level is LAeq,1h 50-55 dB	Increase in ambient sound level is likely to be noticeable in affected buildings and outdoor recreational areas, or Absolute sound level is 1-5 dB above Sport England guidance for avoiding moderate annoyance
High	Change in ambient sound level is greater than-5.0 dBA, Or > Absolute ambient sound level is LAeq,1h 55 dB	Increase in ambient sound level levels is likely to be clearly perceptible and could have a significant effect on the continued use of a building, or Absolute ambient sound level is above Sport England guidance for avoiding moderate annoyance

[16] *Assessed at the façade most affected by construction activity from the Proposed Development when no construction activity is present*

[17] *Institute of Environmental Management and Assessment (IEMA) and Institute of Acoustics (IOA) Guidelines for Noise Impact Assessment, October 2014*

Traffic Noise

9.88 Significance criteria for assessing the road traffic noise associated with the Proposed Development (including construction, Phase 2 opening and full opening) has been taken from guidance within DMRB, as presented in Table 9.5.

Table 9.5 Magnitude of Impact – Traffic Noise

Magnitude of Impact	Short Term Increase in Noise Level (dBA)	Long Term Increase in Noise Level (dBA)	Description
Very Low	<1.0	<3.0	Noise increase is unlikely to be discernible
Low	1.0 – 2.9	3.0 to 4.9	A slight increase in noise levels may be perceived in affected buildings and outdoor recreational areas
Medium	3.0 – 4.9	5.0 to 9.9	Increase in noise levels is likely to be noticeable in affected buildings and outdoor recreational areas
High	>5.0	>10.0	Increase in noise levels is likely to be clearly perceptible and could have a significant effect on the continued use of a building

Building Services Plant Noise

9.89 Noise levels from building services plant associated with the Proposed Development will need to be controlled to ensure that they will not have an impact on nearby noise sensitive receptors relative to the background sound level. Criteria for the assessment are set in accordance with BS 4142 and the IOA/IEMA 'Guidelines for Noise Impact Assessment'[18], as identified in Table 9.6.

Table 9.6 Magnitude of Impact – Building Services Plant Noise

Magnitude of Impact	Increase in Sound Pressure Level (dBA)	Description
Very Low	<1.0	Noise increase is unlikely to be discernible
Low	1.0-2.9	A slight increase in noise levels may be perceived in affected buildings and outdoor recreational areas
Medium	3.0-4.9	Increase in noise levels is likely to be noticeable in affected buildings and outdoor recreational areas
High	>5.0	Increase in noise levels is likely to be clearly perceptible and could have a significant effect on the continued use of a building

Defining the Effect

9.90 Table 9.7 details the scale of effects, when combining the sensitivity of the receptor and the magnitude of the impact, based on the IOA/IEMA 'Guidelines for Noise Impact Assessment'.

Table 9.7 Scale of Effects

Sensitivity of Receptor	Magnitude of Impact			
	High	Medium	Low	Very Low
High	Major	Moderate	Minor	Negligible
Medium	Moderate	Minor	Negligible	Negligible
Low	Minor	Negligible	Negligible	Negligible

Nature

9.91 All noise and vibration effects are considered either adverse or negligible. Whilst beneficial noise effects can occur, this assumes an improvement from the baseline environment and in practice is unlikely when a new development is being introduced to the local environment.

9.92 An 'adverse effect' is considered anything that can cause a change in behaviour, attitude or changes the character of a place in a negative manner.

Geographic Extent of Effect

9.93 The geographic extent of the effect has been identified. At a spatial level, 'site' or 'local' effects are those affecting the site and neighbouring receptors, while effects upon receptors in Hertsmere beyond the vicinity of the site and its neighbours are at a 'Borough' level. Effects affecting South-East England are at a 'regional' level, whilst those which affect different parts of the country, are considered being at a 'national' level.

Effect Duration and Direct and Indirect Effects

9.94 For the purposes of the ES, effects that are generated as a result of the demolition and construction works (i.e. those that last for this set period of time) are classed as 'temporary' and either short or medium term. Short term effects are defined effects which will occur for less than two months, and medium-term effects occur for longer than two months. Effects that result from the completed and operational Proposed Development are classed as 'permanent' or 'long-term' effects.

9.95 Noise and vibration effects are generally considered to be direct effects (i.e. resulting without any intervening factors).

Categorising Likely Significant Effects

9.96 Table 9.8 categorises the likely scale of effect in context of what would be experienced by the receptors. This is based on the IOA/IEMA guidelines and the Planning Practice Guidelines (PPG)[19].

9.97 Table 9.8 also relates the scale of effect with where adverse effects on health and quality of life can be detected. This follows guidance in the Noise Policy Statement for England (NPSE)[20], which introduces the terms Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL). The LOAEL is the level at which adverse effects on health and quality of life can be detected, with the SOAEL the level above which significant adverse effects on health and quality of life occur.

[18] *Institute of Environmental Management and Assessment (IEMA) and Institute of Acoustics (IOA) Guidelines for Noise Impact Assessment, October 2014*

[19] *Department of Communities and Local Government (2018) Planning Practice Guidance*

[20] *Department for Environment, Food and Rural Affairs, Noise Policy Statement for England (NPSE), March 2010*

Table 9.8 Classification of Noise Effects Relative to LOAEL and SOAEL

Scale of Effect (Adverse)	Description of Effect	Exceeds SOAEL?	Exceeds LOAEL?	Scale of Effect Significant
Major	Disruptive, causes a material change in behaviour and/ or attitude. Potential for sleep disturbance. Quality of life diminished due to change in character of the area.	Yes	Yes	Yes
Moderate	Intrusive, noise can be heard and causes small changes in behaviour and/ or attitude. Potential for non-awakening sleep disturbance. Affects the character of an area such that there is a perceived change in the quality of life.	Yes	Yes	
Minor	Non-intrusive, can be heard but does not cause any change in behaviour or attitude. Can slightly affect the character of an area but not such that there is a perceived change in the quality of life.	No	Yes	No
Negligible	No discernible effect on the receptor	No	No	No

9.98 For all sources (including from demolition and construction) any adverse effect resulting in Moderate/ Major effects are generally considered **significant**. Negligible and Minor effects are not significant.

Site Suitability

9.99 The aim of the assessment of site suitability is to establish the likely level of risk associated with the Proposed Development from a noise perspective. Assessment is focused on the residential elements of the Proposed Development, as these are high sensitivity.

9.100 Each plot has been evaluated by applying the Stage 1 principles in ProPG[21] and the requirements outlined in Greater Cambridge SDP[22]. These evaluations consider the free-field sound level during the day (07:00-23:00) and night (23:00-07:00). Each range of sound levels is assigned a risk category, which aligns with a particular action, as presented in Table 9.9.

Table 9.9 Noise Risk Categories for Assessing Site Suitability

Noise Risk Category	Daytime (07:00-23:00) Ambient Sound Pressure Level ($L_{Aeq,16h}$ dB)	Night time (23:00-07:00) Ambient Sound Pressure Level ($L_{Aeq,8h}$ dB)	Description
Negligible	<50	<40	These noise level indicate that the site is likely to be acceptable from a noise perspective without further consideration
Low	51-55	41-45	Site is likely to be acceptable from a noise perspective
Medium	56-60	46-60	Site is less suitable from a noise perspective and a good design process would need to be followed that demonstrates how adverse noise impacts will be avoided
High	61-69	61-69	Expert advice required to avoid adverse impacts
Very High	>69	>69	Site unlikely to be suitable on a noise basis

9.101 The second stage (after appraising Noise Risk Categories) aims at establishing the type of mitigation that would be required to achieve suitable internal noise levels. The second stage is based on indoor ambient sound level guidance within BS 8233[23] and those listed in Greater Cambridge SDP, as per Table 9.10.

Table 9.10 Indoor Ambient Noise Level Criteria (BS 8233 and GC SDP)

Indoor Residential Activity	Location	Daytime (07:00 to 23:00)	Night-time (23:00 to 07:00)
Resting	Living room	$L_{Aeq,16hr}$ 35 dB	-
Dining	Dining room/Area	$L_{Aeq,16hr}$ 40 dB	-
Sleeping	Bedroom	$L_{Aeq,16hr}$ 35 dB	$L_{Aeq,8hr}$ 30 dB

9.102 In addition to the indoor ambient sound levels, it will be necessary to show that suitable noise levels are achievable in gardens. Section 7.7.3.2 of BS 8233 states the following with respect to noise levels in external residential amenity areas:

For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with the upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognised that these guide values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centre or urban areas adjoining the strategic transport network, a compromise of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

Other locations, such as balconies, roof gardens and terraces are also important in residential buildings where normal external space might be limited or not available, i.e. in flats, apartment blocks, etc. In these locations, specification of noise limits is not necessarily appropriate. Small balconies may be included for uses such as drying washing or growing pot plants, and noise limits should not be necessary for these uses. However, the general guidance on noise in amenity is still appropriate for larger balconies, roof gardens and terraces, which might be intended to be used for relaxation. In high-noise areas, consideration should be given to protecting these areas by screening or building design to achieve the lowest practicable levels. Achieving levels of 55 dB $L_{Aeq,T}$ or less might not be possible at the outer edge of these areas, but should be achievable in some areas of space.

9.103 BS 8233 can be interpreted to mean that noise levels of $L_{Aeq,16h}$ 50 dB or lower should be targeted for traditional gardens and other designated areas, though noise levels up to $L_{Aeq,16h}$ 55 dB could also be suitable and not result in adverse impacts to the occupants.

9.104 BS 8233 is clear that the guideline noise levels are not intended to be used for balconies and that exceeding the recommendations should not be used to prohibit development. However, ProPG recommends that all residential properties have access to amenity (or nearby outdoor space) where the noise recommendations are achieved.

9.105 Consequently, the objective is to identify the areas of the Proposed Development where the BS 8233 threshold is achieved and promote design to facilitate all future occupants to have access to private, shared or open spaces nearby by where these are met.

9.106 Table 9.11 presents the proposed evaluation of external amenity spaces.

[21] *ProPG: Planning & Noise – New Residential Development: Main Guidance*

[22] *Greater Cambridge Sustainable Design and Construction Supplementary Planning Document*

[23] *British Standard BS 8233:2014 – Guidance on sound insulation and noise reduction for buildings.*

Table 9.11 Categories for External Amenity

Ambient Sound Level ($L_{Aeq,16h}$ dB)	Colour	Description
<50		Less than guidance in BS 8233/ProPG
51-55		Meets guidance in BS 8233/ProPG
56-58		Marginal exceedance in guidance in BS 8233/ProPG. Noise levels could reduce to meet the guidance with measures not included in model
59-65		Exceeds guidance though with some amenity value, i.e. can hold conversations comfortably over short distances.
>65		Exceeds guidance and with increasingly limited amenity value.

BASELINE CONDITIONS

9.107 All measurement positions are shown in Figure 9.1. The survey indicates that road traffic is the dominant source of noise across the site, with notable contributions from M11, A14, Huntingdon Road (A1307) and Madingley Road (A1303). The measurement results indicate that the weather, in particular wind direction, has a strong influence on the measured sound levels. The change in wind direction is seen to influence noise from the M11 by up to $L_{Aeq,12h}$ 9 dB.

Typical Noise Levels

9.108 The noise climate around the site is mainly affected by road traffic, in particular the M11 and Huntingdon Road (A1307).

9.109 The representative background sound levels and ambient noise during the unattended surveys are shown in Table 9.12 and Table 9.13 respectively.

Table 9.12 Representative Background Sound Levels at Long Term Monitoring Locations

Position	Representative Free-Field Background Sound Levels $L_{A90,15min}$ (dB)	
	Day (07:00 to 23:00)	Night (23:00 to 07:00)
1	47	42
2	43	38
3	52	46
4	59	40

Table 9.13 Ambient Sound Levels at Long Term Monitoring Locations

Position	Free-Field Ambient Sound Levels $L_{Aeq,T}$ (dB)			
	Day (07:00 to 19:00)	Evening (07:00 to 19:00)	Night (23:00 to 07:00)	L_{DEN}
1	50-52	47-51	46-51	54-57
2	41-52	35-50	40-50	47-51
3	51-62	47-59	52-59	58-63
4	53-62	50-61	49-60	57-67

9.110 The representative recorded background sound levels and ambient noise during the attended survey are shown in Table 9.14 and Table 9.15.

Table 9.14 Representative Background Sound Levels at Short-Term Monitoring Locations

Position	Representative Free-Field Background Sound Levels $L_{A90,15min}$ (dB)
	Daytime (07:00 to 23:00)
5	45
6	66
7	57
8	58

Table 9.15 Ambient Sound Levels at Short-Term Monitoring Locations

Position	Free-Field Ambient Sound Levels $L_{Aeq,15mins}$ (dB)
	Daytime (07:00 to 23:00)
5	47-51
6	71-72
7	68-69
8	70-71

RECEPTORS AND RECEPTOR SENSITIVITY

Existing Receptors

9.111 The receptors assessed in the impact assessment presented in this ES chapter have been identified in Figure 9.3 and listed with their respective sensitivities (according to Table 9.1) in Table 9.16.

9.112 The Phase 1 plots which are under construction (Lot 4, M1, M3 and S1/S2) are due to be completed prior to works commencing on the Proposed Development, so have been considered as existing receptors.

Table 9.16 Summary of Existing Receptors

Receptor Reference ID (Figure 9.3)	Property	Type	Receptor Sensitivity
A	Huntingdon Road Properties (Howe Farm House, Girton Gate, College Holt, Hadleigh House, West Acre, New Hayes, Huntingfield, Roston, Farmfield, Middlefield, Girton Corner, 1-7 Bunkers Hill, Grange House, Thorpe, Thorndyke, Westchester, Arcady and Trinity Farm)	Residential	High
B	Girton College	Residential College	High
C	Lots S1 and S2	Residential	High
D	Holly Nurseries	Residential	High
E	Arcady	Residential	High
F	Lot M1	Residential	High
G	Lot M2	Residential	High
H	Lot 5	Residential	High

Receptor Reference ID (Figure 9.3)	Property	Type	Receptor Sensitivity
I	University Of Cambridge Primary School	School	High
J	Lots 2 and 3	Residential	High
K	Lot S3	Residential	High
L	Premier Inn Cambridge North and Travelers Rest	Hotel and Residential	High
M	Mill House	Residential	High
N	UN Environment World Conservation Centre	Research Centre	Medium
O	147-217 Huntingdon Road	Residential	High
P	4-8 All Souls Lane	Residential	High
Q	32a, 32b and 34 Storey's Way and All Souls Chapel	Residential and Workshop	High
R	2 to 30 Storey's Way	Residential	High
S	Madingley Rise Site	College	Medium
T	Institute of Energy and Environmental Flow	Research Centre	Medium
U	Conduit Head Road and 1-8 Bradrushe Fields	Residential	High
V	1-12 Landsdowne Road	Residential	High
W	Lot M3	Residential	HIgh

9.113 These receptors are considered representative of other potential receptors further away from the site as, if noise levels are not deemed significant at these receptors, the receptors further afield will also not be significantly affected. Receptors further afield will be assessed if significant effects are unanimously identified.

Figure 9.3 Existing Surrounding Receptors



Introduced

9.114 The Proposed Development will introduce residential uses which are considered as high sensitivity receptors in terms of site suitability.

EMBEDDED MITIGATION

9.115 Limited embedded mitigation has been included within the assessments, e.g. no hoardings during demolition, enabling or construction works and no mitigation for reducing operational noise.

9.116 The mitigation that has been embedded within the evaluations are associated with the changes to the land profiling, i.e. the relocation and redistribution of the Phase 1 soil heaps to along the western edge of the site.

POTENTIAL EFFECTS

Enabling, Demolition and Construction

9.117 Images of the predicted noise levels during the demolition and construction works are presented in **ES Volume 3, Noise and Vibration – Annex 5**.

9.118 The noise levels presented in this ES chapter are the maximum predicted at each block (receptor) identified from the modelling of the Proposed Development. The impacts predicted are pre-mitigation and align with the '*Assumptions and Limitations*' section of this ES chapter.

9.119 The predicted noise levels presented are those calculated at a distance of 1m from the receptor' building façade and also accounts for reflections from the building façade.

Construction Noise – On-Site Activities

9.120 The timeslices modelled and the relevant receptors are summarised below (refer to **ES Volume 1, Chapter 5: Enabling, Demolition and Construction** for construction programme detail).

Table 9.17 Assessment Timeslices

Timeslice	Description of Key Activities at Timeslice Selected	Introduced Receptors
1	Earthworks for Phases 2 and 3, Huntingdon Road Junction, Cartwright Avenue Construction and on-plot works at Plots F2 and F3	None
2	On-plot works at F1, E1 and E2	F2 and F3
3	On-plot works at D1, D2 and C1	Phase 2A (plots F2, F3 and G)
4	Earthworks on Phase 4 and demolition of Plot A	Phase 2A, F1 and E1
5	On-plot works at plot J1	Phase 2A and 2B (plots F1, E1 and E2)
6	On-plot works at C2, B2, A, J2, H1, H2 and H3	Phase 2A, 2B and plots D2 and C1

9.121 Table 9.18 presents a summary of predicted enabling and construction noise levels. Table 9.19 presents a summary of the results and the likely effects for each receptor. Images are presented within **ES Volume 3, Noise and Vibration – Annex 5**. Where significant effects are predicted (Moderate Adverse or Major Adverse), these cells are shaded grey.

Table 9.18 Predicted Demolition and Construction Noise Levels

Receptors (ID)	Sensitivity	Timeslice 1	Timeslice 2	Timeslice 3	Timeslice 4	Timeslice 5	Timeslice 6
Huntingdon Road Properties (A)	High	61	52	61	62	44	65
Girton College (B)	High	59	49	57	58	42	64
Lots S1 and S2 (C)	High	69	62	65	52	38	51
Holly Nurseries (D)	High	54	48	60	49	45	47
Arcady (E)	High	56	54	61	49	46	50
Lot M1 (F)	High	57	54	65	52	50	51
Lot M2 (G)	High	71	61	48	45	50	51
Lot 5 (H)	High	77	68	46	44	46	50
University of Cambridge Primary School (I)	High	59	51	47	52	54	57
Lots 2 and 3 (J)	High	66	64	45	48	50	51
Lot S3 (K)	High	61	58	43	54	55	61
Premier Inn Cambridge North and Travelers Rest (L)	High	47	46	43	50	45	51
Mill House (M)	High	52	47	47	48	46	51
UN Environment World Conservation Centre (N)	Medium	51	45	44	52	54	59
147-217 Huntingdon Road (O)	High	49	44	42	63	53	62
4-8 All Souls Lane (P)	High	39	33	32	62	54	62
32a, 32b and 34 Storey's Way and All Souls Chapel (Q)	High	40	33	32	62	52	61
2 to 30 Storey's Way (R)	High	37	33	34	60	57	63
Madingley Rise Site (S)	Medium	46	41	33	60	71	60
Institute of Energy and Environmental Flow (T)	Medium	43	39	32	54	68	59
Conduit Head Road and 1-8 Bradrushe Fields (U)	High	46	44	36	69	64	62
1-12 Landsdowne Road (V)	High	46	43	34	50	54	56
Lot M3 (W)	High	52	51	42	58	59	64
F2	High	-	66	48	45	47	50
F3	High	-	61	49	46	46	52
G	High	-	-	45	46	49	49
F1	High	-	-	-	47	48	48
E1	High	-	-	-	54	38	49
E2	High	-	-	-	-	43	51
C1	High	-	-	-	-	-	67
D1	High	-	-	-	-	-	60
D2	High	-	-	-	-	-	64

Table 9.19 Predicted Demolition and Construction Likely Effects

Receptors (ID)	Sensitivity	Timeslice 1	Timeslice 2	Timeslice 3	Timeslice 4	Timeslice 5	Timeslice 6
Huntingdon Road Properties (A)	High	Minor Adverse (not significant)	Negligible (not significant)	Minor Adverse (not significant)	Minor Adverse (not significant)	Negligible (not significant)	Minor Adverse (not significant)
Girton College (B)	High	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Minor Adverse (not significant)
Lots S1 and S2 (C)	High	Moderate Adverse (significant)	Minor Adverse (not significant)	Minor Adverse (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
Holly Nurseries (D)	High	Negligible (not significant)	Negligible (not significant)	Minor Adverse (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
Arcady (E)	High	Negligible (not significant)	Negligible (not significant)	Minor Adverse (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
Lot M1 (F)	High	Negligible (not significant)	Negligible (not significant)	Minor Adverse (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
Lot M2 (G)	High	Major Adverse (significant)	Minor Adverse (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
Lot 5 (H)	High	Major Adverse (significant)	Moderate Adverse (significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
University of Cambridge Primary School (I)	High	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
Lots 2 and 3 (J)	High	Moderate Adverse (significant)	Minor Adverse (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
Lot S3 (K)	High	Minor Adverse (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Minor Adverse (not significant)
Premier Inn Cambridge North and Travelers Rest (L)	High	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
Mill House (M)	High	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
UN Environment World Conservation Centre (N)	Medium	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)

Receptors (ID)	Sensitivity	Timeslice 1	Timeslice 2	Timeslice 3	Timeslice 4	Timeslice 5	Timeslice 6
147-217 Huntingdon Road (O)	High	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Minor Adverse (not significant)	Negligible (not significant)	Minor Adverse (not significant)
4-8 All Souls Lane (P)	High	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Minor Adverse (not significant)	Negligible (not significant)	Minor Adverse (not significant)
32a, 32b and 34 Storey's Way and All Souls Chapel (Q)	High	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Minor Adverse (not significant)	Negligible (not significant)	Minor Adverse (not significant)
2 to 30 Storey's Way (R)	High	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Minor Adverse (not significant)	Negligible (not significant)	Minor Adverse (not significant)
Madingley Rise Site (S)	Medium	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Moderate Adverse (significant)	Negligible (not significant)
Institute of Energy and Environmental Flow (T)	Medium	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Minor Adverse (not significant)	Negligible (not significant)
Conduit Head Road and 1-8 Bradrushe Fields (U)	High	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Moderate Adverse (significant)	Minor Adverse (not significant)	Minor Adverse (not significant)
1-12 Landsdowne Road (V)	High	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
Lot M3 (W)	High	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Minor Adverse (not significant)
F2	High	-	Moderate Adverse (significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
F3	High	-	Minor Adverse (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
G	High	-	-	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
F1	High	-	-	-	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
E1	High	-	-	-	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
E2	High	-	-	-	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)
C1	High	-	-	-	-	Negligible (not significant)	Moderate Adverse (significant)
D2	High	-	-	-	-	Negligible (not significant)	Negligible (not significant)

9.122 The results presented in Table 9.18 indicated the following:

- During Timeslice 1 a Major Adverse (**significant**) effect is predicted at Lot M2 (G) and Lot 5 (H) and a Moderate Adverse (**significant**) effect is predicted at Lots S1 and S2 (C) and Lots 2 and 3 (J). The effects at the remaining receptors are either Minor Adverse (not significant) or Negligible (not significant);
- During Timeslice 2 a Moderate Adverse (**significant**) effect is predicted at Lot 5 (H) and on introduced receptors in Plot F2. All other receptors are predicted to experience either Minor Adverse (not significant) or Negligible (not significant) effects;
- During Timeslice 4 a Moderate Adverse (**significant**) effect is predicted at Conduit Head Road and 1-8 Bradrushe Fields (U). All other receptors are predicted to experience either Minor Adverse (not significant) or Negligible (not significant) effects;
- During Timeslice 5 a Moderate Adverse (**significant**) effect is predicted at Madingley Rise Site (S). All other receptors are predicted to experience either Minor Adverse (not significant) or Negligible (not significant) effects;
- During Timeslice 6 a Moderate Adverse (**significant**) effect is predicted at introduced receptors in Plot C1. All other receptors are predicted to experience either Minor Adverse (not significant) or Negligible (not significant) effects; and
- During Timeslice 3 all receptors are predicted to experience either Minor Adverse (Not Significant) or Negligible (not significant) effects;

9.123 The Major Adverse (**significant**) effects during Timeslice 1 are due to the multiple construction sites being built close to the receptors in addition to the road construction. While all these works could take place at the same time, it is likely in practice that only some of the noisiest activities will occur at the same time, i.e. noise levels are expected to be lower.

9.124 The remaining timeslices are influenced by the on-plot works, in particular the piling activities. Generally these periods of high piling activities last a couple of months, with the predictions representing the worst-case positions and on-times.

9.125 The analysis indicates that while adverse impacts are expected during each timeslice, the geographic extent of the impacts will be limited to the receptors that are closest to the activities.

9.126 All reasonable steps will be taken to mitigate and minimise the effects through adopting of Best Practicable Means (BPM). Noise mitigation measures and noise management plans covering BPM shall be put into place to ensure that noise is minimised at all times. Noise mitigation measures representing BPM (as defined in Section 72 of the COPA) are described in the '*Mitigation Measures, Monitoring and Residual Effects'* section of this ES chapter.

Construction Traffic

9.127 The potential effects of construction traffic noise has been appraised across the site on each link.

9.128 The 2027 construction traffic movement estimates (presented in **ES Volume 1**, **Chapter 5: Enabling, Demolition and Construction**) shows an estimated daily peak of 38 HGV vehicles per day (during the peak month) servicing the Proposed Development (72 two-way trips).

9.129 The general increases in sound level across the site are shown in Figure 9.4. The image indicates that generally increases in sound level are either Negligible (light green - less than 1dB increase) or Low (dark green - less than 3dB increase). The exception are increases at some facades of Lots S1 and S2 (C), where the increase is Medium (3-5 dB increase).

9.130 Table 9.20 provides the detailed increases expected at the affected receptors.

Figure 9.4 **2027 Construction Traffic Change in Sound Level (Light Green = Very Low, Dark Green = Low Impact, Orange = Medium Impact and Red = High Impact)**



Table 9.20 **2027 Construction Traffic Assessment**

Receptor (ID)	Predicted Sound Level ($L_{Aeq,16h}$ dB)			Receptor Sensitivity	Magnitude of Impact	Scale of Effects
	2027 Baseline (Do Nothing 2027)	2027 Peak Construction (Do Something 2027)	Change with Proposed Development			
Lots S1 and S2 (C)	57	60	3.0	High	Medium	Moderate Adverse (**significant**)
Lots 2 and 3 (J)	55	57	2.0	High	Low	Minor Adverse (not significant)
Lot S3 (K)	61	62	1.0	High	Low	Minor Adverse (not significant)
Conduit Head Road and 1-8 Bradrushe Fields (U)	57	59	2.0	High	Low	Minor Adverse (not significant)
Lot M3 (W)	56	56	2.0	High	Low	Minor Adverse (not significant)

9.131 The effects at Lots S1 and S2 (C) are predicted to be up to Moderate Adverse (**significant**), local, direct and temporary. The effects are related to the changes in the land profiling between the M11 and the receptor, i.e. removal of the Phase 1 soil heaps. The effect due to construction traffic is minimal compared to the reduction in screening that is currently provided to small parts of Lots S1 and S2 (C).

9.132 The effects at Lots 2 and 3 (J), Lot S3 (K), Conduit Head Road and 1-8 Bradrushe Fields (U) and Lot M3 (W) are predicted to be Minor Adverse (not significant), local, direct and temporary.

9.133 Effects at all other receptors are predicted to be Negligible (not significant), local, direct and temporary.

Construction Vibration

9.134 BS 5228 indicates that construction activities (particularly piling) generally only generate vibration impacts when they are located less than 20m from sensitive locations. The magnitude of impact depends on the type of piling, ground conditions, and receptor distance.

9.135 Whilst it is not possible to accurately estimate the level of vibration with any certainty (it is dependent on the type of piling, ground conditions, and the distance to the receptor), it is proposed that limits are placed on the vibration at sensitive buildings (receptors) and therefore vibration levels will need to be monitored during construction at the sensitive locations. The guidance within BS 5228-2 states that vibration PPV levels are tolerable within residential properties when they do not exceed 1.0mm/s and prior warning of potential vibration inducing works is given to building occupants.

9.136 Annex C and D of the guidance within BS 5228-2 provide summaries of case histories of vibration measured during piling operations. The examples presented within BS 5228-2 suggest that the potential vibration levels are unlikely to impact any buildings outside of the Proposed Development site, and that at reasonable distances from the location of the works the estimated vibration levels would be expected to be substantially lower than the vibration levels stated above due to geometric propagation attenuation.

9.137 Considering the receptors identified within the surrounding area, the following assessment is made taking into account the receptor's distance from the piling locations (typically perimeter of building).

- Receptors located over 100m of piling activities -
  - The proposed piling positions are expected to be at levels at or below 0.30 mm/s, which corresponds with a Very Low magnitude of impact;
  - The effects on receptors located at Holly Nurseries (D), Arcady (E), University of Cambridge primary school (I), Premier Inn Cambridge North and Travelers Rest (L), Mill House (M), UN Environment World Conservation Centre (N), 147-217 Huntingdon Road (O), 4-8 All Souls Lane (P), 32a, 32b and 34 Storey's Way and All Souls Chapel (Q), 2 to 30 Storey's Way (R), 1-12 Landsdowne Road (V) and Lot M3 (W) will be Negligible (not significant); and
- Receptors located between 20m to 100m of piling activities -
  - The proposed piling positions are expected to be at levels at or below 1mm/s, which corresponds with a Low magnitude of impact; and
  - The effects on receptors located at Huntingdon Road Properties (A), Girton College (B), Lot M1 (F), Lot 5 (H) and Lots 2 and 3 (J) are assessed to be Minor Adverse (not significant).
- Receptors that are within 20m of piling activities -
  - The proposed piling positions could be exposed to at levels of between 1mm/s - 3mm/s, which correspond to a Medium magnitude of impact;
  - The effects on receptors at Lots S1 and S2 (C), Lot M2 (G), Lot S3 (K), Conduit Head Road and 1-8 Bradrushe Fields (U) are assessed to be Moderate Adverse (**significant**); and
  - The effects on receptors at Madingley Rise Site (S) and Institute of Energy and Environmental Flow (T) (Medium sensitivity) are assessed to be Minor Adverse (not significant).

Completed Development

Building Services Plant

9.138 Table 9.21 presents the overall cumulative (all building services plant associated with Phases 2, 3 and 4) plant noise emission limit at each residential receptor.

Table 9.21 Cumulative Overall Building Services Plant Noise Limits

Receptor (ID)	Building Services Noise Limits at 1m from Façade (dB)		Assessed Representative Free-Field Background Noise Level (dB)		Increase in Background Noise Level (dB)	Receptor Sensitivity	Magnitude of Impact	Scale of Effects
	Daytime (0700 to 2300 hours)	Night-time (2300 to 0700 hours)	Daytime (0700 to 2300 hours)	Night-time (2300 to 0700 hours)				
Huntingdon Road Properties (A)	44	39	47	42	<1.0	High	Very Low	Negligible (Not Significant)
Girton College (B)	44	39	47	42	<1.0	High	Very Low	Negligible (Not Significant)
Lots S1 and S2 (C)	49	43	52	46	<1.0	High	Very Low	Negligible (Not Significant)
Holly Nurseries (D)	44	39	47	42	<1.0	High	Very Low	Negligible (Not Significant)
Arcady (E)	44	39	47	42	<1.0	High	Very Low	Negligible (Not Significant)
Lot M1 (F)	49	43	52	46	<1.0	High	Very Low	Negligible (Not Significant)
Lot M2 (G)	49	43	52	46	<1.0	High	Very Low	Negligible (Not Significant)
Lot 5 (H)	56	52	59	55	<1.0	High	Very Low	Negligible (Not Significant)
University of Cambridge primary school (I)	40	35	43	38	<1.0	High	Very Low	Negligible (Not Significant)
Lots 2 and 3 (J)	56	52	59	55	<1.0	High	Very Low	Negligible (Not Significant)
Lot S3 (K)	56	52	59	55	<1.0	High	Very Low	Negligible (Not Significant)
Premier Inn Cambridge North and Travelers Rest (L)	44	39	47	42	<1.0	High	Very Low	Negligible (Not Significant)
Mill House (M)	44	39	47	42	<1.0	High	Very Low	Negligible (Not Significant)
UN Environment World Conservation Centre (N)	40	35	43	38	<1.0	Medium	Very Low	Negligible (Not Significant)
147-217 Huntingdon Road (O)	40	35	43	38	<1.0	High	Very Low	Negligible (Not Significant)
4-8 All Souls Lane (P)	40	35	43	38	<1.0	High	Very Low	Negligible (not significant)
32a, 32b and 34 Storey's Way and All Souls Chapel (Q)	40	35	43	38	<1.0	High	Very Low	Negligible (Not Significant)
2 to 30 Storey's Way (R)	40	35	43	38	<1.0	High	Very Low	Negligible (Not Significant)
Madingley Rise Site (S)	40	35	43	38	<1.0	Medium	Very Low	Negligible (Not Significant)
Institute of Energy and Environmental Flow (T)	40	35	43	38	<1.0	Medium	Very Low	Negligible (Not Significant)
Conduit Head Road and 1-8 Bradrushe Fields (U)	40	35	43	38	<1.0	High	Very Low	Negligible (Not Significant)
1-12 Landsdowne Road (V)	40	35	43	38	<1.0	High	Very Low	Negligible (Not Significant)
Lot M3 (W)	40	35	43	38	<1.0	High	Very Low	Negligible (Not Significant)
Phase 2	44	39	47	42	<1.0	High	Very Low	Negligible (Not Significant)
Phase 3	44	39	47	42	<1.0	High	Very Low	Negligible (Not Significant)
Phase 4	45	40	44	39	<1.0	High	Very Low	Negligible (Not Significant)

9.139 The cumulative limits presented in Table 9.21 do not include penalties for acoustic features, such as tones, impulsivity etc. The penalties for acoustic features will need to be evaluated with reference to BS 4142 when the plant is selected by the plot designers.

9.140 Each new residential building plot will include their own building services plant, typically Air Source Heat Pumps, transformers, life safety plant (smoke extract and emergency generator) and other associated equipment. Each dwelling will be equipped with mechanical ventilation and heat recovery units (MVHRs).

9.141 The commercial buildings are expected to include similar building services plant, though also include heat rejection plant and central air handling units.

9.142 Each development plot will need to include acoustic attenuation to their selected building services plant to control noise emissions onto their own facades and the facades of existing and future buildings. The provision for the acoustic attenuation will need to be considered early in the design of the building, so that adequate space is allowed on roof tops and other designated plant areas. The precise measures will be detailed within Reserved Matters Applications (RMAs).

9.143 As the building services plant would be expected to be designed to achieve the recommended limits shown (in accordance with BS 4142), it is expected that the magnitude of impact will be Negligible and the effect will be Negligible (not significant), direct, permanent (long-term).

Road Traffic Noise

Interim Year 2033

9.144 Figure 9.5 illustrates the change in sound pressure level ($L_{Aeq,16h}$ dB) predicted across the site with and without the Proposed Development for the Year 2033.

Figure 9.5 Predicted Change in Traffic Sound Pressure Level ($L_{Aeq,16h}$ dB) for Interim Year 2033 – Light Green=<1dB, Dark Green=1-3dB, Orange=3-5dB and Red>5dB



9.145 The image shows that generally no increases are expected at the existing receptors, i.e. a Very Low impact and Negligible (not significant) effects. The exceptions are:

- Lot 5 (H);
- Lot S3 (K); and
- Lot M3 (W).

9.146 The more detailed analysis for the identified receptors is provided in Table 9.22.

Table 9.22 Predicted Change in Road Traffic Sound Pressure Levels – Year 2033

Receptor	Predicted Sound Level ($L_{Aeq,16h}$ dB)			Receptor Sensitivity	Magnitude of Impact	Scale of Effects
	2033 Baseline (Do Nothing 2033)	2033 Interim (Do Something 2033)	Change with Proposed Development			
Lot 5 (H)	63	65	2	High	Low	Minor Adverse (not significant)
Lot S3 (K)	58	60	2	High	Low	Minor Adverse (not significant)
Lot M3 (W)	57	59	2	High	Low	Minor Adverse (not significant)

9.147 The analysis indicates that Minor Adverse (not significant) effects are predicted at Lot 5, Lot S3 and Lot M3 due to increases in road traffic expected during the interim year opening.

9.148 All other receptors are predicted to experience Negligible (not significant) effects.

9.149 All effects will be local, direct and temporary.

Full Opening Year – 2038

9.150 Figure 9.6 illustrates the change in sound pressure level ($L_{Aeq,16h}$ dB) predicted across the site with and without the Proposed Development for the Year 2038, when the Proposed Development is expected to be fully open and operational.

Figure 9.6 Predicted Change in Traffic Sound Pressure Level ($L_{Aeq,16h}$ dB) for Full Opening Year 2038 – Light Green=<1dB, Dark Green=1-3dB, Orange=3-5dB and Red>5dB



9.151 The image shows that generally no increases are expected at the existing receptors, i.e. a Very Low impact and Negligible (not significant) effects. The exceptions are:

- Lot 5 (H)
- Lot S3 (K);
- Conduit Head Road and 1-8 Bradrushe Fields (U);
- 1-12 Landsdowne Road (V); and
- Lot M3 (W).

9.152 The more detailed analysis for the identified receptors is provided in Table 9.23.

Table 9.23 Predicted Change in Road Traffic Sound Pressure Levels – Year 2038

Receptor	Predicted Sound Level ($L_{Aeq,16h}$ dB)			Receptor Sensitivity	Magnitude of Impact	Scale of Effects
	2038 Baseline (Do Nothing 2037)	2038 Interim (Do Something 2037)	Change with Proposed Development			
Lot 5 (H)	63	65	2	High	Low	Minor Adverse (not significant)
Lot S3 (K)	58	60	2	High	Low	Minor Adverse (not significant)
Conduit Head Road and 1-8 Bradrushe Fields (U)	54	58	4	High	Medium	Moderate Adverse (**significant**)
1-12 Landsdowne Road (V)	56	58	2	High	Low	Minor Adverse (not significant)
Lot M3 (W)	57	61	4	High	Medium	Moderate Adverse (**significant**)

9.153 Moderate Adverse (**significant**) effects are predicted at Conduit Head Road and 1-8 Bradrushe Fields (U) and Lot M3 (W) when the site is fully operational. Minor Adverse (not significant) effects are predicted at Lot 5 (H), Lot S3 (K) and 1-12 Landsdowne Road (V). Negligible (not significant) effects are predicted at the remaining existing receptors. All effects will be direct, long term and permanent.

9.154 The Moderate Adverse (**significant**) effects are due to the new road link to Phase 4 of the Proposed Development. It is expected that the road traffic increases at the affected properties will be gradual, as this section of the Proposed Development becomes fully occupied. Other contextual considerations are important, e.g. the extant scheme (2013 OPP) included a new road at this location, the absolute sound level predicted are not high and the overall likely impact on the occupants is expected to be Low.

9.155 The absolute sound levels fall beneath the significance levels identified in DMRB (i.e. $L_{A10,\ 18h}$ 68 dB). In addition, the acoustic report submitted to support the design of Plot M3[24] describes that the building is designed to reduce external daytime façade sound levels of up to $L_{Aeq,16h}$ 61 dB, i.e. the highest predicted external sound level are accommodated by the design measures adopted in the building.

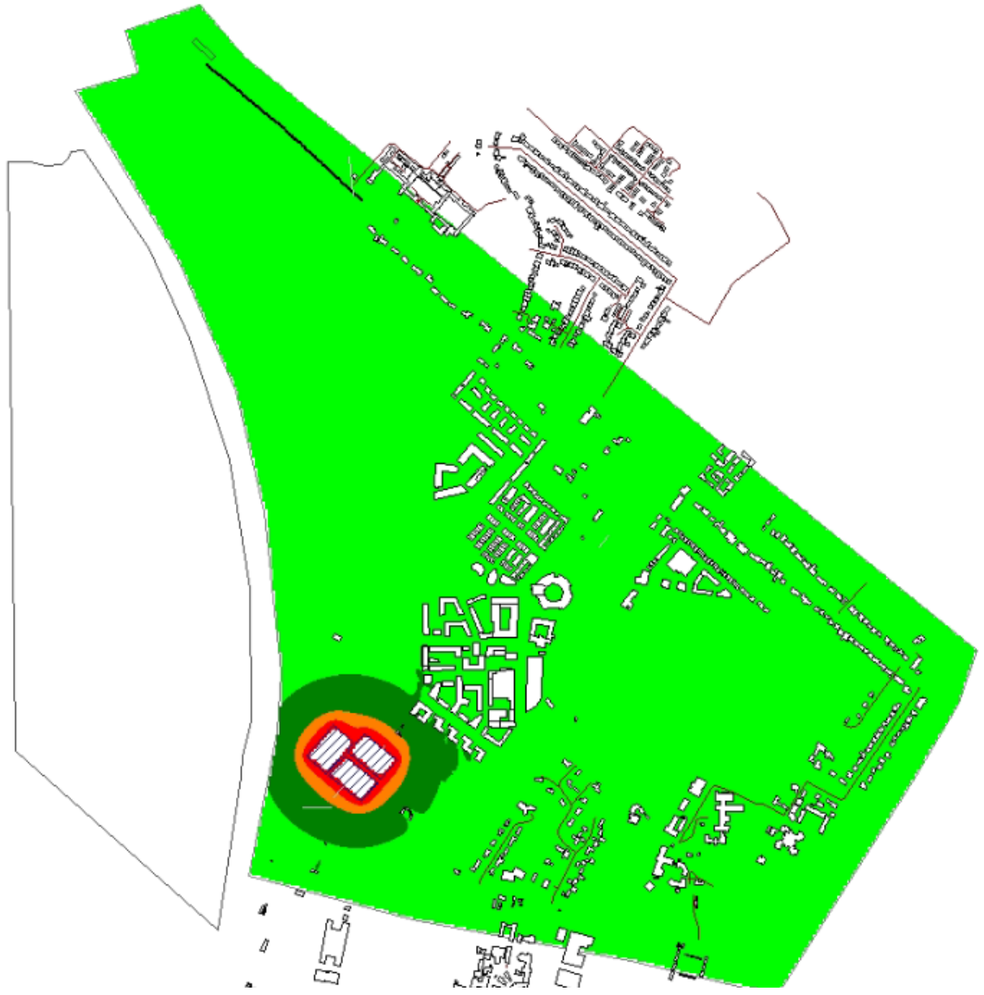
9.156 Given the above, the Moderate Adverse (**significant**) effects are unlikely to be experienced, and receptors at both Conduit Head Road and 1-8 Bradrushe Fields and Lot M3 have been judged to experience Minor Adverse (not significant) effects.

Sports Pitches and Recreational Areas

9.157 Figure 9.7 shows the predicted noise emissions from the sports pitches should all sports pitches be used at the same time. The analysis presented without the Proposed Development coming forward, to represent the potential worst-case impacts at the existing receptors.

9.158 Figure 9.8 indicates that the predicted sound level from a single person shouting at the BMX track would result in a negligible impact at all surrounding receptors. The analysis presented is with the Proposed Development coming forward. This is as the analysis indicates that sound from the BMX tracks is expected to be limited in any scenario that can come forward, i.e. noise emissions from the BMX is irrelevant under any scenario.

Figure 9.7 Sports Pitch Absolute Noise Emissions (Light Green = Very Low, Dark Green = Low Impact, Orange = Medium Impact and Red = High Impact)[25]



[24] *Lot M3, Reserved Matters Application Noise Insulation Scheme, February 2017 (Planning Reference: 17/0285/REM)*

[25] *Predictions provided without the Proposed Development to illustrate the worst-case impacts on the existing receptors, i.e. without beneficial screening. This is not relevant for the BMX assessment*

Figure 9.8 **BMX Absolute Noise Emissions (Light Green = Negligible, Dark Green = Low Impact, Orange = Medium Impact and Red = High Impact)**



Table 9.24 **Evaluation of Sound from Sports Pitches at Existing Receptors**

Receptor (ID)	Predicted Free-Field Sound Level ($L_{Aeq,T}$ dB)		Receptor Sensitivity	Magnitude of Impact	Scale of Effects
	Baseline[26]	Sports Pitch Contribution			
Huntingdon Road Properties (A)	56	29	High	Very Low	Negligible (not significant)
Girton College (B)	53	27	High	Very Low	Negligible (not significant)
Lots S1 and S2 (C)	54	36	High	Very Low	Negligible (not significant)
Holly Nurseries (D)	55	32	High	Very Low	Negligible (not significant)
Arcady (E)	54	33	High	Very Low	Negligible (not significant)
Lot M1 (F)	54	35	High	Very Low	Negligible (not significant)
Lot M2 (G)	54	41	High	Very Low	Negligible (not significant)
Lot 5 (H)	54	44	High	Very Low	Negligible (not significant)
University of Cambridge Primary School (I)	51	39	High	Very Low	Negligible (not significant)
Lots 2 and 3 (J)	54	48	High	Very Low	Negligible (not significant)
Lot S3 (K)	60	51	High	Very Low	Negligible (not significant)
Premier Inn Cambridge North and Travelers Rest (L)	55	31	High	Very Low	Negligible (not significant)
Mill House (M)	54	31	High	Very Low	Negligible (not significant)
UN Environment World Conservation Centre (N)	54	36	Medium	Very Low	Negligible (not significant)
147-217 Huntingdon Road (O)	51	32	High	Very Low	Negligible (not significant)
4-8 All Souls Lane (P)	53	27	High	Very Low	Negligible (not significant)
32a, 32b and 34 Storey's Way and All Souls Chapel (Q)	52	28	High	Very Low	Negligible (not significant)
2 to 30 Storey's Way (R)	51	29	High	Very Low	Negligible (not significant)
Madingley Rise Site (S)	48	37	Medium	Very Low	Negligible (not significant)
Institute of Energy and Environmental Flow (T)	50	37	Medium	Very Low	Negligible (not significant)
Conduit Head Road and 1-8 Bradrushe Fields (U)	50	43	High	Very Low	Negligible (not significant)
1-12 Landsdowne Road (V)	52	43	High	Very Low	Negligible (not significant)
Lot M3 (W)	48	43	High	Very Low	Negligible (not significant)

[26] *Lowest predicted sound pressure level on the façade based on modelled results*

9.159 Table 9.24 indicates that most receptors are predicted to be exposed to sound pressure levels below $L_{Aeq,1h}$ 45 dB. This will result in a Very Low magnitude of impact and Negligible (not significant), local, direct and permanent effect at all receptor sensitivities.

9.160 The only receptors that are predicted to experience sound levels in excess of $L_{Aeq,1h}$ 45 dB are Lots 2 and 3 (J) and Lot S3. At these receptors, the existing ambient sound levels are relatively high (given their proximity to the M11), such that any increase in ambient sound level is predicted to be less than 1.0dB. Consequently, the magnitude of impact at these receptors has been judged to be Very Low and a Negligible (not significant) local, direct and permanent effects.

9.161 When the Proposed Development is considered (i.e. location of buildings as per the Illustrative Masterplan) then the same outcomes are noted. Most plots are exposed to sound pressure levels less than $L_{Aeq,1h}$ 45 dB, with the only exception being those in Plot G (which are adjacent to Lot S3), which are predicted to be exposed to sound levels of $L_{Aeq,1h}$ 52 dB, though with baseline sound levels of $L_{Aeq,T}$ 60 dB predicted. Accordingly, the change in sound level will be less than 1.0dB, which results in a Negligible (not significant) local, direct and permanent effect.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Enabling, Demolition and Construction Mitigation

9.162 Good industry standards, guidance and practice procedures (i.e., Considerate Contractors Scheme) will be followed in order to minimise noise and vibration effects during demolition and construction. Noise and vibration will be managed to avoid and minimise significant impacts, where mitigation measures have been documented within the Construction Environmental Management Plan (CEMP) submitted with the planning application. Paragraphs 9.160 – 9.168 document the mitigation measures not inherently included within assessments completed which are captured within the CEMP. It is anticipated that the implementation of the CEMP, as well as other relevant construction management plans, will be secured through appropriately worded planning conditions.

Demolition and Construction Works Noise

9.163 The underlying objective would be for the mitigation measures to be employed to ensure that potential noise impacts at nearby sensitive receptors, as a result of enabling, demolition and construction activities, are minimised.

9.164 The preferred approach for controlling demolition and construction noise is to reduce source levels where possible, but with due regard to practicality. The simplest and most effective method of reducing noise at nearby receptors is to ensure that noisy plant is located as far from receptors as practicable and is screened using temporary barriers.

9.165 Noise experienced by receptors can also be reduced by limiting the daily time that noisy equipment is operated; however, it is acknowledged that sometimes a greater noise level may be acceptable if the duration of the activity, and therefore length of disruption, is reduced.

9.166 Noise shall be minimised by adopting BPM as standard working practices across the site to ensure that noise is reduced whenever practicable. The following provisions are examples of BPM and will be adhered to where practicable throughout the demolition and construction programme:

- The production of a construction noise and vibration report that evaluates the construction activities and provides specific BPM to reduce noise and vibration;
- Installing a solid and continuous barrier around the site(s);
- Limiting high impact activities (e.g., breaking and piling) to specific times during the day, e.g., 1 hour on – 1 hour off, or 09:00-12:00 and 14:00-17:00;
- Plant is to be properly maintained and operated in accordance with manufacturer's recommendations. Electrically powered plant is preferred, where practicable, to mechanically powered alternatives;
- Where feasible, all stationary plant would be located so that the noise effect at all occupied residential and commercial properties is minimised and, if practicable, every item of static plant when in operation is to be sound attenuated using methods based on the guidance and advice given in BS 5228;
- Trade contractors would at all times apply the principle of Best Practicable Means as defined in Section 72 of the COPA and carry out all work in such a manner as to reduce any disturbance from noise and vibration to a minimum; and
- The timing of building operations will be critical in avoiding noise and vibration nuisance to surrounding areas and premises. The contractor would identify particularly sensitive periods in the works so that the potential problems can be minimised and that early and good public relations with the adjacent occupants of buildings are maintained.

9.167 The assessment of potential construction noise and vibration impacts in this ES chapter has not taken account of the above measures (i.e., the assessment is of unmitigated effects).

9.168 During the detailed working up of the construction programme and preparation of any future CEMP(s), the BPM measures to mitigate potential noise and vibration impacts on nearby noise sensitive premises will be defined and agreed with the Cambridge City Council (CCC) and South Cambridgeshire District Council (SCDC). The primary method for the control of noise and vibration being a Section 61 agreement under the Control of Pollution Act 1974 ('COPA') with the CCC and SCDC being established.

9.169 It is expected that a Section 61 agreement under the COPA will contain appropriate noise and vibration limits at the nearby properties. These limits shall be monitored and reported, with the reports highlighting when it is likely that the construction limits will be exceeded, so that construction activities can be effectively altered to mitigate.

9.170 In addition, a Section 61 agreement also sets out a dispensation and variation procedure under which consent can be applied for to carry out works which would potentially exceed the agreed noise and vibration limits or must occur at times when such work is otherwise not approved. Such dispensation / variations would be applied for where there are good engineering, safety or practical reasons for undertaking the works at these times. The selected contractor should adopt measures, including site supervision arrangements, to reduce noise and vibration to a minimum in accordance with BPM, as defined in Section 72 of the COPA.

9.171 It has been predicted that significant noise effects (unmitigated) have the potential to occur at several receptors locations during the period of demolition and construction works, and could represent intermittent, temporary significant effects. Through the implementation of mitigation measures representing BPM, it is conservatively assumed that construction noise levels can be reduced by 5dB.

9.172 Assuming the losses provided through the mitigation measures adopted by the Contractor(s), the significant effects will be limited to the following:

- Major Adverse (**significant**) effects at Lot 5 (High Sensitivity) during Timeslice 1; and
- Moderate Adverse (**significant**) effects at Lot M2 (High Sensitivity) during Timeslice 1.

9.173 The effects at all other receptors would be downgraded by one category, i.e. Moderate Adverse (**significant**) effects are Minor Adverse (not significant) and Minor Adverse (not significant) are Negligible (not significant).

9.174 Timeslice 1 represents a considerable amount of coincident activities within a specific location of the site, in particular the road construction works associated with Cartwright Avenue. It is likely that construction of the road and the on-plot (Plots F2 and F3) can be programmed so that they do not all occur at the same time, or if they do it is only for a short period.

9.175 The evaluations indicate that significant effects will be limited in duration and geographic extent.

Demolition and Construction Traffic Noise

9.176 Moderate Adverse (**significant**) effect is predicted at Lots S1 and S2 (C). The effect is related to an increase in sound from the M11 due to the removal of the soil heaps, rather than increases in road traffic due to construction. The increase in sound levels will be temporary, as new buildings that are built between Lots S1 and S2 and the M11, which in the long term is expected to reduce sound levels from the M11 at these receptors.

9.177 Nevertheless, the following measures are to be employed as best practice to ensure that construction traffic noise effects remain as predicted:

- Vehicles employed for any activity associated with the construction works will, where reasonably practicable, be fitted with effective exhaust silencers and shall be maintained in good working order and operated in a manner such that noise emissions are controlled and limited as far as reasonably practicable;
- Time slots are adopted for deliveries to ensure that convoys of vehicles do not arrive simultaneously and avoid unnecessary idling on-site;
- Strict control to prevent temporary parking on kerbsides in the vicinity of noise sensitive receptors; and
- The use of sufficient clear signage to ensure that construction vehicles use only designated routes.

9.178 Likely residual noise effects, due to increases in road traffic in the 2027 year, are expected to remain the same, with Moderate Adverse (**significant**) at Lots S1 and S2 (C), Minor Adverse (not significant) at Lots 2 and 3 (J), Lot S3 (K), Conduit Head Road and 1-8 Bradrushe Fields (U) and Lot M3 (W) and Negligible (not significant) at all other receptors.

Construction Vibration

9.179 Adverse effects are only likely to occur if piling activities are taking place in proximity to sensitive receptors (i.e. assuming the worst case, less than 20m distance). In reality, high vibration generating activities are unlikely to occur so close to sensitive receptors as detailed planning methodology (i.e., Piling Method Statement) and solutions can seek to further reduce the potential for adverse impacts, and if they do, they would be of short-term duration and appropriately monitored.

9.180 Given that there is potential for predicted impacts to be significant under the worst case scenario, mitigation measures will be put in place to ensure that vibration effects are minimised as far as practicable through the use of an appropriate piling technique, design and methodology.

9.181 To reduce potential vibration impacts due to piling, the contractor shall use a piling technique that is least likely to cause adverse vibration impacts (e.g., piling), to ensure that the likely effect of vibration is reduced or avoided at nearby receptors.

9.182 A Piling Method Statement (PMS) will also be provided and agreed prior to the commencement of these works. Vibration limits will be set in accordance with BS5228-2 to minimise the risk of complaints or building damage. These limits will be controlled through implementation of the CEMP and vibration monitoring. The statement will also include vibration and noise monitoring and action levels.

9.183 It is considered that, with the appropriate and successful implementation of the mitigation proposed, the likely adverse effects predicted would reduce. However, until the final piling strategy and detailed construction planning are identified, for the purpose of this assessment, the worst case effects are concluded at Lots S1 and S2 (C), Lot M2 (G), Lot S3 (K) and Conduit Head Road and 1-8 Bradrushe Fields (U) of Moderate Adverse (**significant**).

Completed Development Mitigation

Building Services Plant

9.184 Building services plant will be designed to achieve the recommended limits set out in Table 9.21 (in accordance with BS 4142 and CCoC typical requirements), which will be secured by condition. As such, it is expected that the magnitude of impact will be Negligible and the effect will be Negligible (not significant). Typical measures to be considered to ensure that the building services noise criteria are achieved include low-noise equipment, in-duct attenuators and acoustic enclosures.

Road Traffic

9.185 No significant effects are predicted for the interim opening phase (2033). No further mitigation is therefore proposed.

9.186 No significant effects are predicted during the full opening (2038), once additional relevant context is taken into account i.e. gradual long-term change, absolute sound level and effect on internal sound levels. Nevertheless, given that most of the impacts have been due to the new road connecting onto Phase 4 a number of different strategies can be adopted to reduce sound levels further.

9.187 Low noise road surfaces (single layer or two-layer porous asphalt) can reduce road surface noise, by up to 5 dBA when compared with the hot rolled asphalt (a typical / standard road surface). Accordingly, it is feasible to reduce sound levels at the affected properties further. As the design of the road has not been finished it would be appropriate to consider such mitigation in the future, once the layout and other requirements are confirmed. The review of Garrod Street is to be secured with an appropriately worded planning condition.

Sports Pitches and Recreational Areas

9.188 The evaluation of the sports pitch noise emissions at existing and introduced receptors surrounding the sites indicates that without mitigation, there will be no increase in existing ambient sound levels, i.e. a Negligible (not significant) effect. Accordingly, no further mitigation measures are required.

Residual Effects

9.189 The residual effects resulting from the Proposed Development are summarised in Table 9.25.

Table 9.25 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Enabling, Demolition and Construction							
Lot 5 (H)	Construction noise activity (Timeslice 1)	Major Adverse	Significant	L	D	T	Mt
Lot 5 (H)	Construction noise activity (Timeslice 2)	Minor Adverse	Not Significant	L	D	T	Mt
Lot 5 (H)	Construction noise activity (Timeslices 3, 4, 5 and 6)	Negligible	Not Significant	L	D	T	Mt
Lot M2 (G)	Construction noise activity (Timeslice 1)	Moderate Adverse	Significant	L	D	T	Mt
Lot M2 (G)	Construction noise activity (Timeslices 2, 3, 4, 5 and 6)	Negligible	Not Significant	L	D	T	Mt
Lots 2 and 3 (J)	Construction noise activity (Timeslice 1)	Minor Adverse	Not Significant	L	D	T	Mt
Lots 2 and 3 (J)	Construction noise activity (Timeslices 2, 3, 4, 5 and 6)	Negligible	Not Significant	L	D	T	Mt

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Madingley Rise Site (S)	Construction noise activity (Timeslice 4)	Minor Adverse	Not Significant	L	D	T	Mt
Madingley Rise Site (S)	Construction noise activity (Timeslices 1, 2, 3, 5 and 6)	Negligible	Not Significant	L	D	T	Mt
Conduit Head Road and 1-8 Bradrushe Fields (U)	Construction noise activity (Timeslice 4)	Minor Adverse	Not Significant	L	D	T	Mt
Conduit Head Road and 1-8 Bradrushe Fields (U)	Construction noise activity (Timeslices 1, 2, 3, 5 and 6)	Negligible	Not Significant	L	D	T	Mt
Girton College (B)	Construction noise activity (Timeslices 1-6)	Negligible	Not Significant	L	D	T	Mt
Lots S1 and S2 (C)	Construction noise activity (Timeslice 1)	Minor Adverse	Not significant	L	D	T	St
Lots S1 and S2 (C)	Construction noise activity (Timeslice 2, 3, 4, 5 and 6)	Negligible	Not significant	L	D	T	St
Huntingdon Road properties (A), Holly Nurseries (D), Arcady (E), Lot M1 (F), University of Cambridge primary school (I), Lots S3 (K), Premier Inn Cambridge North and Travelers Rest (L), Mill House (M), UN Environment World Conservation Centre (N), 147-217 Huntingdon Road (O), 4-8 All Souls Lane (P), 32a, 32b and 34 Storey's Way and All Souls Chapel (Q), 2 to 30 Storey's Way (R), Institute of Energy and Environmental Flow (T), 1-12 Landsdowne Road (V) and Lot M3 (W). Introduced, F2, F3, G, F1, E1, E2, C1, D1 and D2	Construction noise activity (all Timeslices)	Negligible	Not Significant	L	D	T	Mt
Lots S1 and S2 (C)	Construction traffic noise	Moderate Adverse	Significant	L	D	T	Mt
Lots 2 and 3 (J), Lot S3 (K), Conduit Head Road and 1-8 Bradrushe Fields (U) and Lot M3 (W)	Construction traffic noise	Minor Adverse	Not Significant	L	D	T	Mt
Huntingdon Road properties (A), Girton College (B), Holly Nurseries (D), Arcady (E), Lot M1 (F), Lot M2 (G), Lot 5 (H), University of Cambridge primary school (I), Premier Inn Cambridge North and Travelers Rest (L), Mill House (M), UN Environment World Conservation Centre (N), 147-217 Huntingdon Road (O), 4-8 All Souls Lane (P), 32a, 32b and 34 Storey's Way and All Souls Chapel (Q), 2 to 30 Storey's Way (R), Institute of Energy and Environmental Flow (T), 1-12 Landsdowne Road (V) and Lot M3 (W)	Construction traffic noise	Negligible	Not Significant	L	D	T	Mt
4-8 All Souls Lane (P), 32a, 32b and 34 Storey's Way and All Souls Chapel (Q), 2 to 30 Storey's Way (R), Madingley Rise Site (S), Institute of Energy and Environmental Flow (T) and 1-12 Landsdowne Road (V)							
Lots S1 and S2 (C), Lot M2 (G), Lots S3 (K), Conduit Head Road and 1-8 Bradrushe Fields (U)	Construction Vibration	Moderate Adverse	Significant	L	D	T	Mt
Huntingdon Road properties (A), Girton College (B), Lot M1 (F) Lot 5 (H), Lots 2 and 3 (J), Madingley Rise Site (S) and Institute of Energy and Environmental Flow (T)	Construction Vibration	Minor Adverse	Not Significant	L	D	T	Mt
Holly Nurseries (D), Arcady (E), University of Cambridge primary school (I), Premier Inn Cambridge North and Travelers Rest (L), Mill House (M), UN Environment World Conservation Centre (N), 147-217 Huntingdon Road (O), 4-8 All Souls Lane (P), 32a, 32b and 34 Storey's Way and All Souls Chapel (Q), 2 to 30 Storey's Way (R), 1-12 Landsdowne Road (V) and Lot M3 (W)	Construction Vibration	Negligible	Not Significant	L	D	T	Mt
Completed Development							
All receptors	Sports pitch	Negligible	Not significant	L	D	P	Lt
All receptors	Building Services Plant Noise	Negligible	Not significant	L	D	P	Lt
Lot 5 (H), Lot S3 (K) and Lot M3 (W)	Road Traffic Noise (interim year)	Minor Adverse	Not significant	L	D	T	Mt
Huntingdon Road properties (A), Girton College (B), Lots S1 and S2 (C), Holly Nurseries (D), Arcady (E), Lot M1 (F), Lot M2 (G), University of Cambridge primary school (I), Lots 2 and 3 (J), Premier Inn Cambridge North and Travelers Rest (L), Mill House (M), UN Environment World Conservation Centre (N), 147-217 Huntingdon Road (O), 4-8 All Souls Lane (P), 32a, 32b and 34 Storey's Way and All Souls Chapel (Q), 2 to	Road Traffic Noise (interim year)	Negligible	Not significant	L	D	T	Mt

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
30 Storey's Way (R), Madingley Rise Site (S), Institute of Energy and Environmental Flow (T), Conduit Head Road and 1-8 Bradrushe Fields (U) and 1-12 Landsdowne Road (V)							
Lot 5 (H), Lot S3 (K), Conduit Head Road and 1-8 Bradrushe Fields (U), 1-12 Landsdowne Road (V) and Lot M3 (W)	Road Traffic Noise (full opening year)	Minor Adverse	Not significant	L	D	P	Lt
Huntingdon Road properties (A), Girton College (B), Lots S1 and S2 (C), Holly Nurseries (D), Arcady (E), Lot M1 (F), Lot M2 (G), University of Cambridge primary school (I), Lots 2 and 3 (J, Premier Inn Cambridge North and Travelers Rest (L), Mill House (M), UN Environment World Conservation Centre (N), 147-217 Huntingdon Road (O), 4-8 All Souls Lane (P), 32a, 32b and 34 Storey's Way and All Souls Chapel (Q), 2 to 30 Storey's Way (R), Madingley Rise Site (S), Institute of Energy and Environmental Flow (T)	Road Traffic Noise (full opening year)	Negligible	Not significant	L	D	P	Lt

Notes:
Residual Effect
- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed

SITE SUITABILITY

9.190 The Proposed Development shall incorporate residential uses that are sensitive to noise and vibration effects. The suitability of the site for residential use has been based on the following:

- Identifying the noise risk for each phase (open/free field conditions) as per Table 9.9; and
- For Phases in Low, Medium or High noise risk categories identifying the acoustic mitigation required to secure good acoustic conditions for the future occupants.

9.191 The site suitability assessment does not include evaluation of potential vibration due to the distance of the site from potential significant sources, i.e. railway lines.

9.192 The assessments are based on the highest measured sound pressure levels during the survey. As can be seen from the monitoring results, the difference between the highest/lowest ambient sound levels is high (e.g. 11dB), which is principally related to the direction of the wind relative to the M11. Accordingly, the impacts outlined are the worst-case for the site and that significantly different acoustic conditions can be experienced across the site.

Noise Risk Categories

Figure 9.9 Daytime Noise Risk Categories (Green = Negligible, Yellow = Low, Orange = Medium and Red = High)

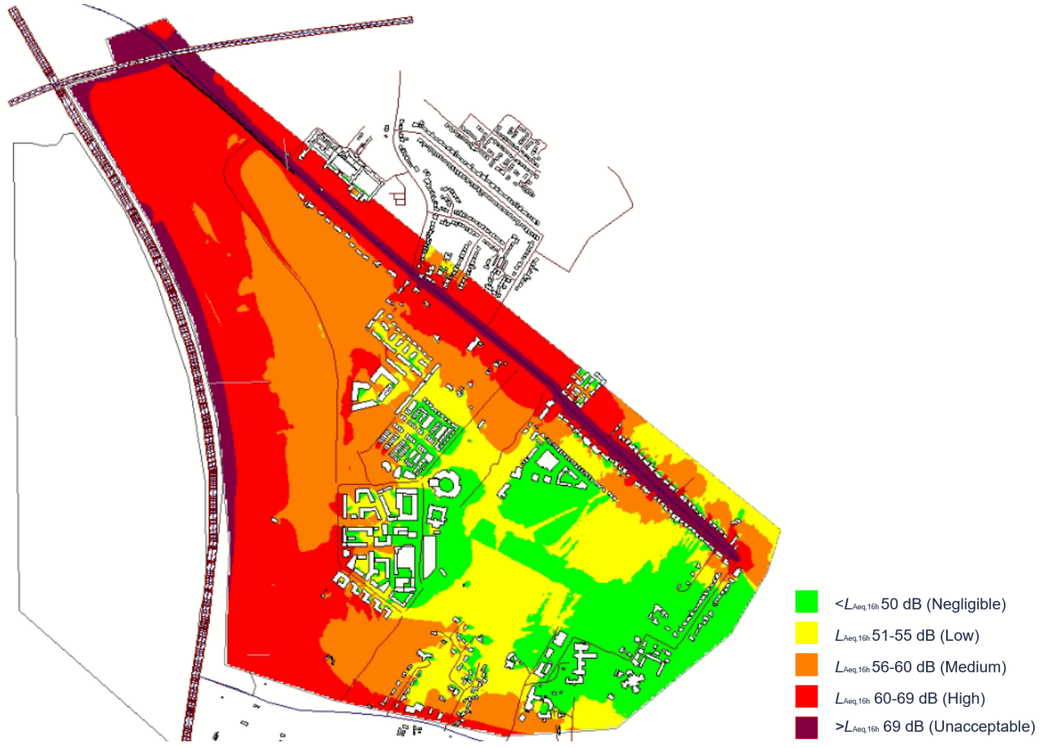
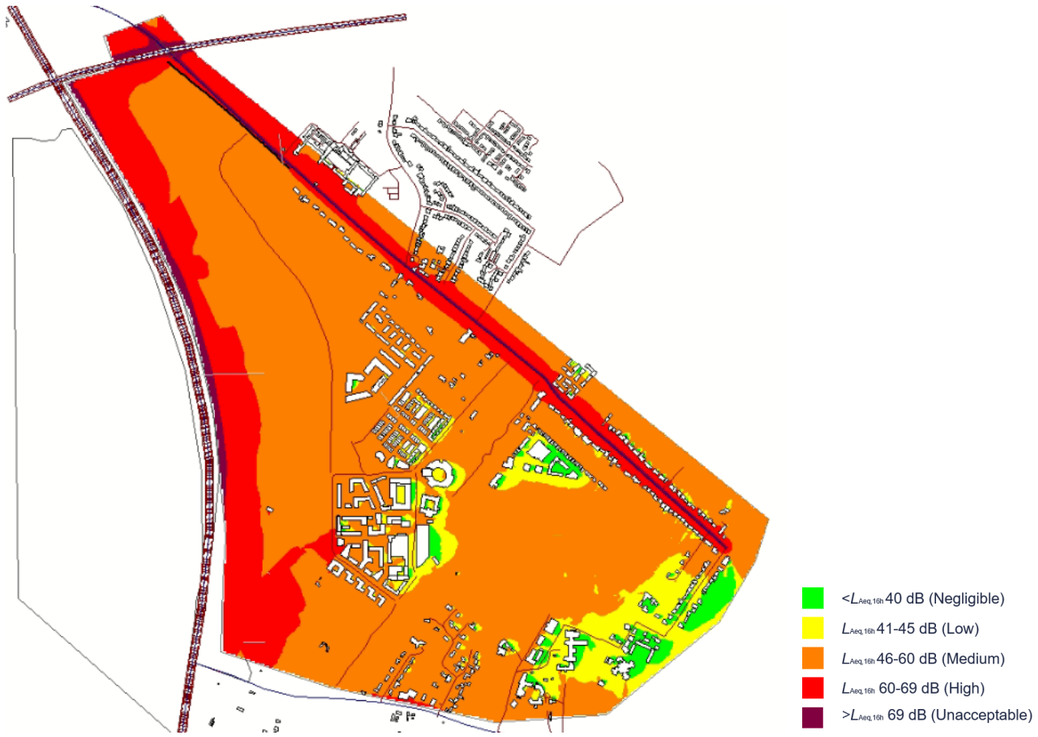


Figure 9.10 Night Time Noise Risk Categories (Green = Negligible, Yellow = Low, Orange = Medium and Red = High)



9.193 Figure 9.9 and Figure 9.10 indicate that the night time noise risks are the most pertinent, which is due noise from the M11.

9.194 All phases would need to demonstrate how, with appropriate mitigation, suitable internal noise levels can be achieved.

Appropriate Mitigation Measures

Façade Sound Insulation

9.195 Figure 9.11 to Figure 9.21 illustrate the noise risk categories in relation to Table 9.9 i.e. Green=Negligible, Yellow=Low, Orange = Medium, Red=High and Purple = Very High.

9.196 Table 9.27 to Table 9.31 summarise the highest indicative overall sound insulation performance of the façade along with the likely overheating control strategy for compliance with the noise criteria in Approved Document O (ADO).

9.197 The overall highest façade sound insulation performances are to be achieved by a combination of glazed and non-glazed elements. The acoustic performance of the glazing can be in the region of 3-5dB lower than the overall performances indicated. Glazing configurations along with their typical sound insulation performances are provided in Table 9.26.

Table 9.26 Indicative Sound Insulation Performance of Different Triple Glazing Configurations

Glazing Sound Insulation Performance ($R'_w + C_{tr}$ dB)	Indicative Overall Façade Sound Insulation ($R'_w + C_{tr}$ dB)	Example Triple Glazing Configuration
≤28	≤31	6 mm glass/16 mm cavity/ 4 mm glass/ 16 mm cavity/ 16 mm glass
28-32	32-35	4mm glass/ 12mm cavity/ 4 mm glass/ 12mm cavity/ 8.4 acoustic laminate glass
33-38	36-41	10mm glass/ 12mm cavity/ 6 mm glass/ 12mm cavity/ 8.4 acoustic laminate glass

Phase 2A (Plots F2, F3 and G)

Figure 9.11 Plot G (South-West Elevation)

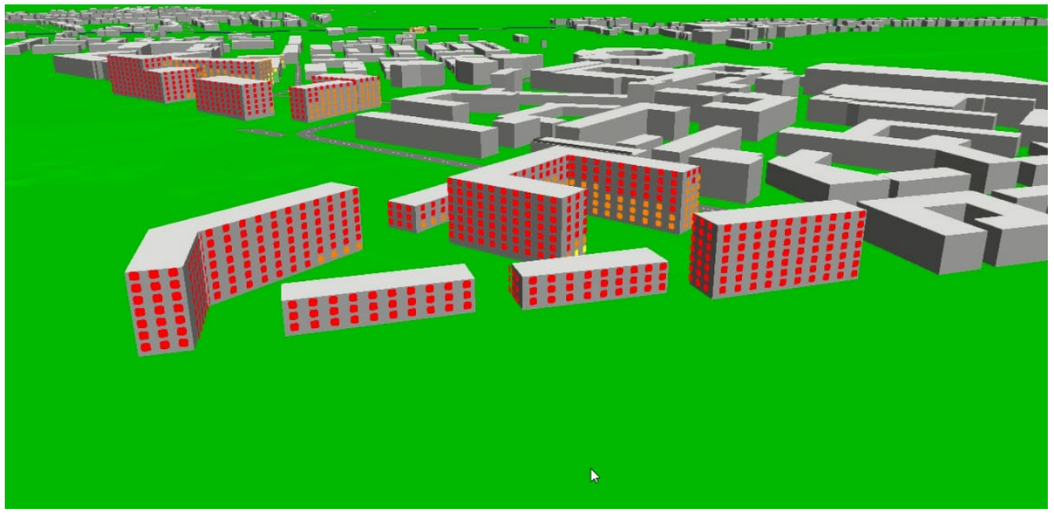


Figure 9.12 Plots F2 and F3 (East Elevations)

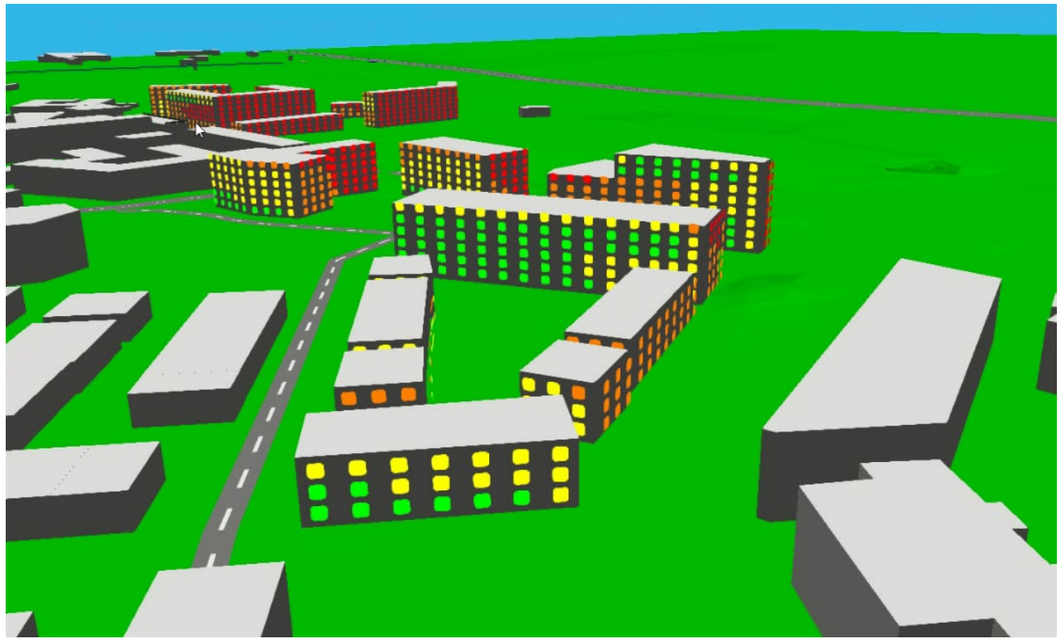


Figure 9.13 Plots F2 and F3 (West Elevations)

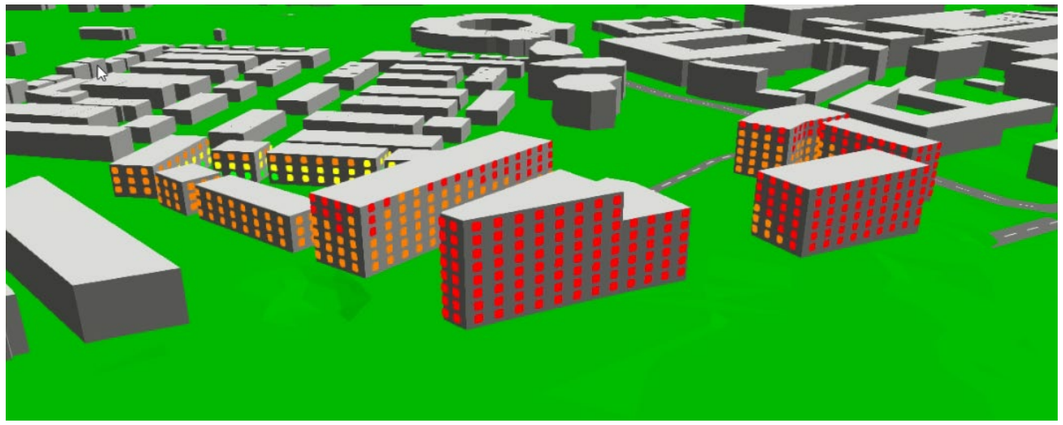


Table 9.27 Phase 2A Overview

Plot	Façade Ambient Sound Pressure Levels ($L_{Aeq,T}$ dB)		Highest Indicative Overall Sound Insulation Performance ($R'_w + C_{tr}$ dB)	Overheating Control Strategy Overview
	Day	Night		
F2	51-64	47-61	33	Natural Ventilation possible for parts of buildings screened from the M11 (F2_2 and F2_3)
F3	51-63	45-60	32	Natural Ventilation possible for parts of buildings screened from the M11 (F3_1)
G	51-67	47-64	36	Alternative to natural ventilation likely throughout

Phase 2B (Plots E1, E2 and F1)

Figure 9.14 Plots E1, E2 and F1 (West Elevations)

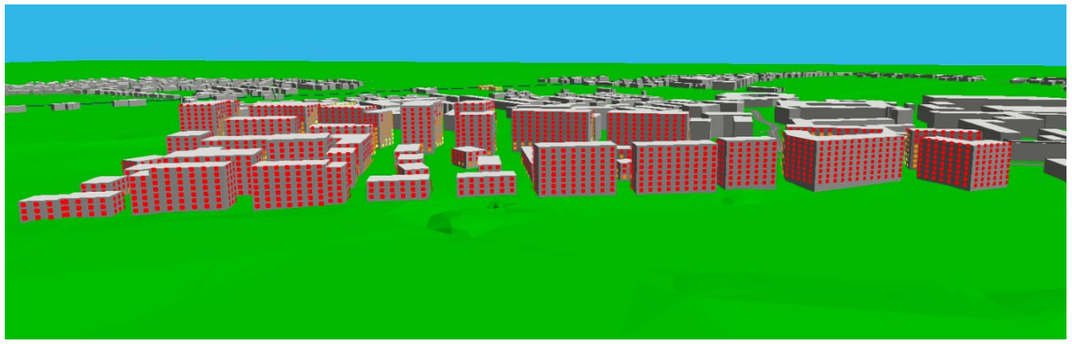


Figure 9.15 Plots E1, E2 and F1 (East Elevations)

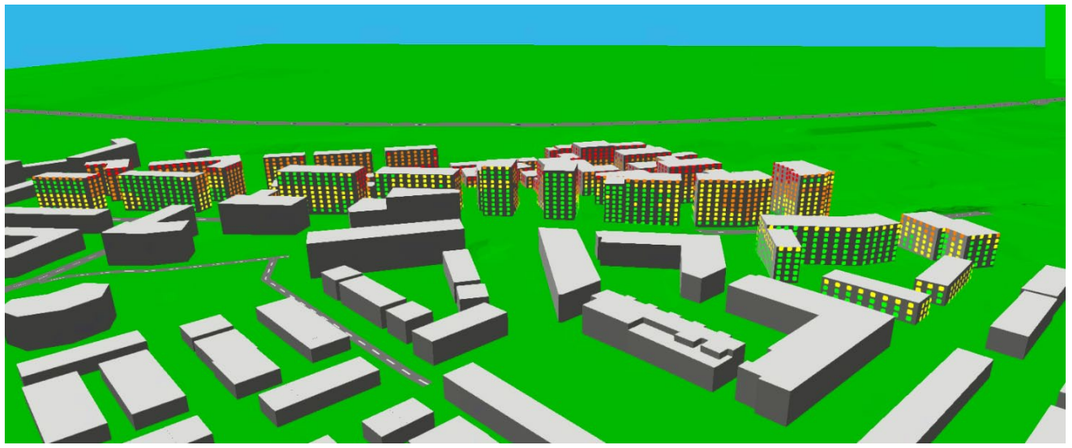


Table 9.28 Phase 2B Overview

Plot	Façade Ambient Sound Pressure Levels ($L_{Aeq,T}$ dB)		Highest Indicative Overall Sound Insulation Performance ($R'_w + C_{tr}$ dB)	Overheating Control Strategy Overview
	Day	Night		
E1	51-68	40-65	37	Alternative to opening windows likely throughout (subject to Cartwright Avenue analysis)
E2	47-63	43-60	32	Natural Ventilation possible for parts of buildings screened from the M11 (blocks E2_1 and E2_2)
F1	45-67	43-64	36	Alternative to opening windows likely throughout (subject to Cartwright Avenue analysis)

Phase 2C (Plots C1, D1 and D2)

Figure 9.16 Plots C1, D1 and D2 (West Elevations)

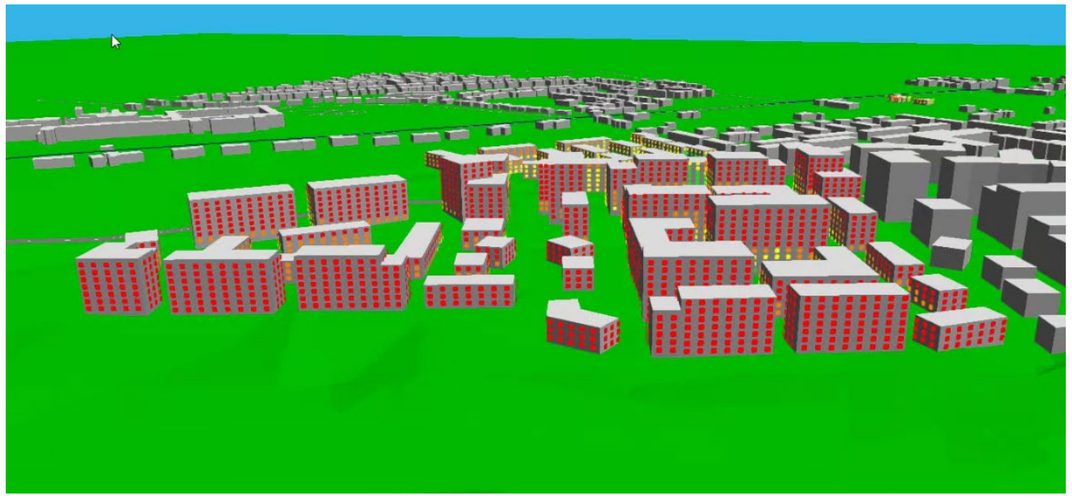


Figure 9.17 Plots C1, C2 and D2 (East Elevations)

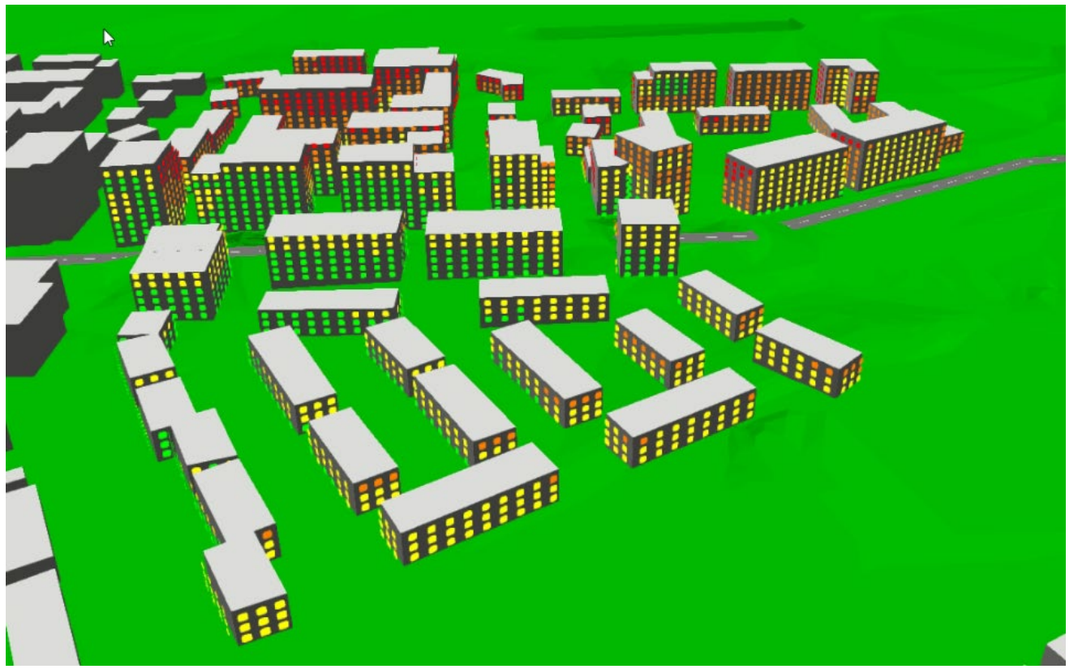


Table 9.29 Phase 2C Overview

Plot	Façade Ambient Sound Pressure Levels ($L_{Aeq,T}$ dB)		Highest Indicative Overall Sound Insulation Performance ($R'_w + C_{tr}$ dB)	Overheating Control Strategy Overview
	Day	Night		
C1	50-68	48-64	36	Alternative to opening windows likely throughout (subject to Cartwright Avenue analysis)
D1	45-68	44-65	37	Alternative to opening windows likely throughout (subject to Cartwright Avenue analysis)
D2	47-62	43-59	31	Potential for natural ventilation for south and east elevations (blocks D2_1, D2_2, D2_3 and D2_4)

Phase 3 (Plots A, B1, B2 and C1)

9.198 Only Plots B2 and C1 include residential uses.

Figure 9.18 Plots B2 and C1 (West Elevations)

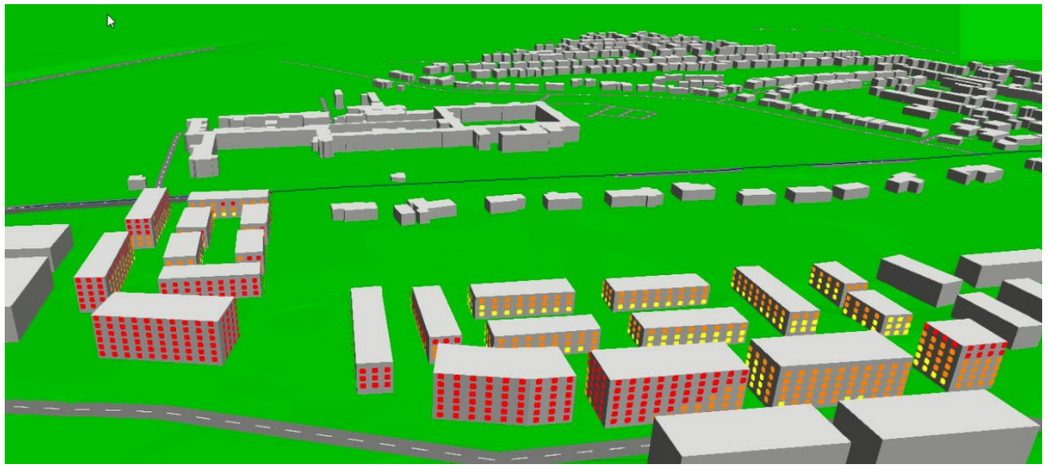


Figure 9.19 Plots B2 and C1 (East Elevations)

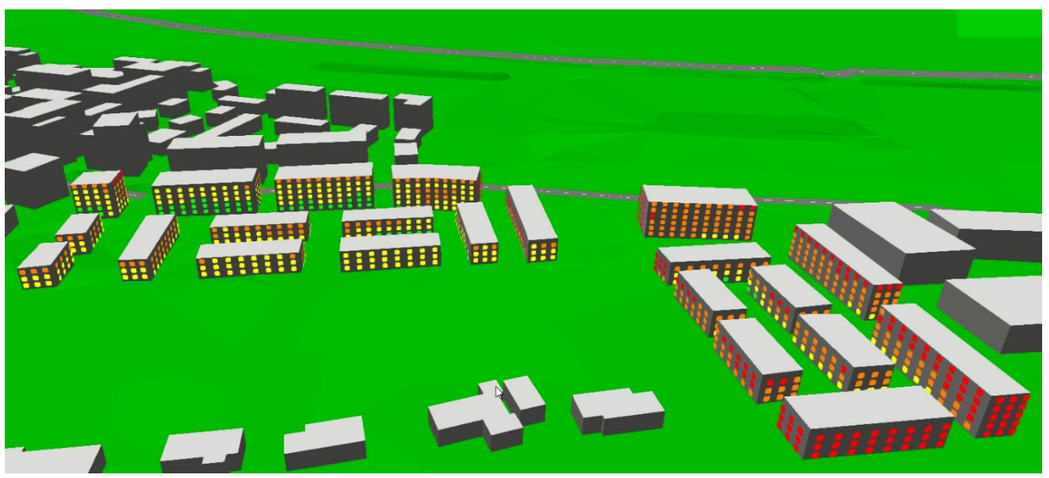


Table 9.30 Phase 3 Overview

Plot	Façade Ambient Sound Pressure Levels ($L_{Aeq,T}$ dB)		Highest Indicative Overall Sound Insulation Performance ($R'_w + C_{tr}$ dB)	Overheating Control Strategy Overview
	Day	Night		
B2	52-64	48-61	33	Limited potential for natural ventilation
C1	53-63	49-60	32	Potential for natural ventilation for south and east elevations

Phase 4 (Plots J, H1, H2 and H3)

9.199 Plots H1, H2 and H3 include residential uses along with part of Plot J.

Figure 9.20 Plots H1, H2, H3 and J (West Elevation)

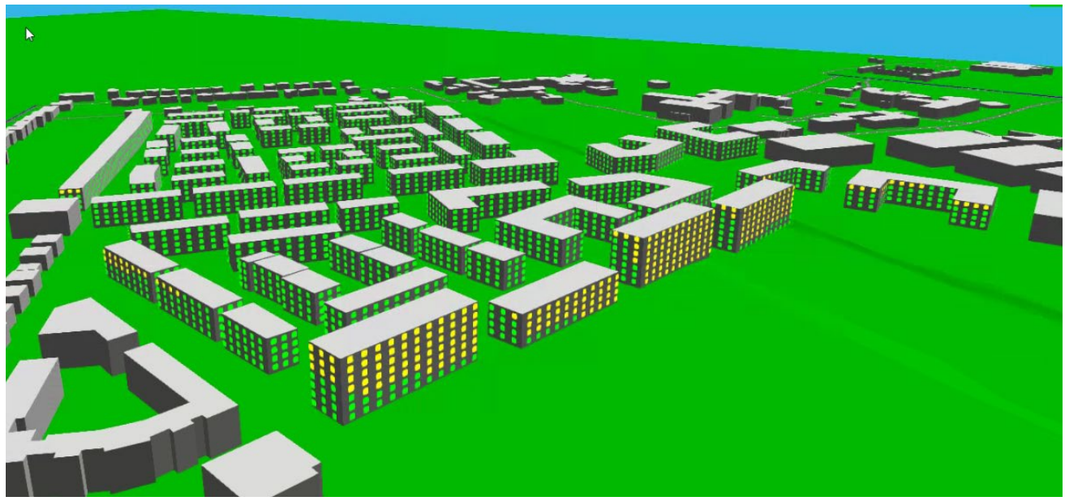


Figure 9.21 Plots H1, H2, H3 and J (North-East Elevation)

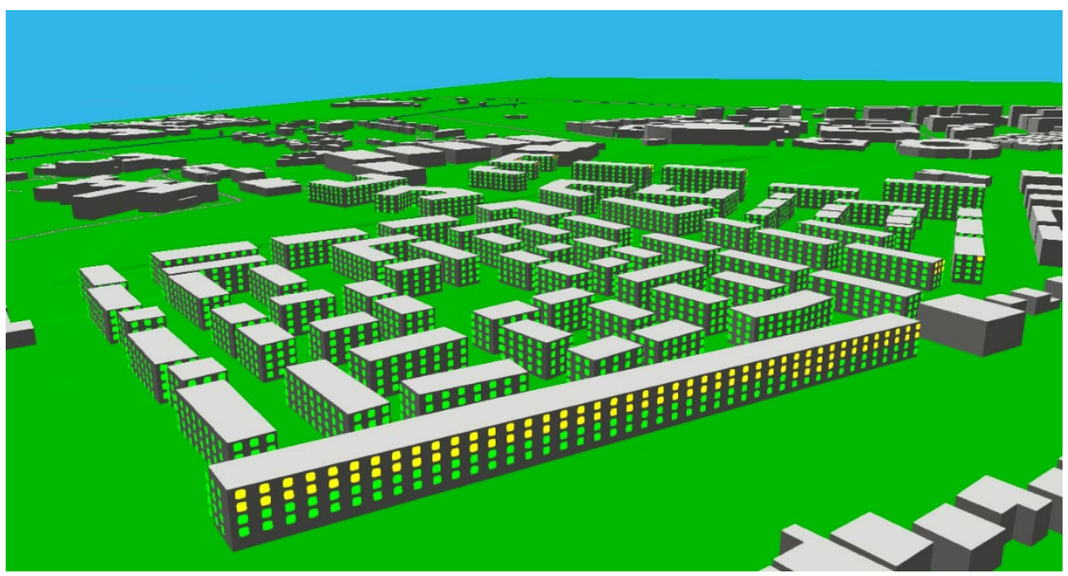


Table 9.31 Phase 4 Overview

Plot	Façade Ambient Sound Pressure Levels ($L_{Aeq,T}$ dB)		Highest Indicative Overall Sound Insulation Performance ($R'_w + C_{tr}$ dB)	Overheating Control Strategy Overview
	Day	Night		
H1	46-54	40-50	22	Natural ventilation likely to be possible throughout
H2	46-55	40-51	23	Natural ventilation likely to be possible throughout
H3	43-58	39-53	25	Natural ventilation likely to be possible throughout
J	45-52	40-50	22	Natural ventilation likely to be possible throughout

9.200 Example glazing build-ups that can provide the necessary acoustic losses are presented in Table 9.32.

Table 9.32 Example Glazing Build-Ups

Sound Insulation ($R'_w + C_{tr}$ dB)	Example Double Glazing Configurations (Glass / Airspace /Glass)
≤27	6mm glass/16mm cavity/6mm glass
29	8mm glass/16mm cavity/6mm glass

External Amenity Noise Level Assessments

9.201 Figure 9.24 to Figure 9.32 illustrate the predicted sound pressure levels 1.5m above ground level with respect to the noise categories in Table 9.11 (repeated in Figure 9.22).

Figure 9.22 Amenity Sound Level Categories

- Less than guidance
- Meets guidance
- Marginal exceedance
- Exceeds guidance though some amenity value
- Exceeds guidance and limited amenity value

9.202 The predictions are based on the highest measured sound levels across the site, i.e. a worst-case evaluation. The predictions illustrate that there are areas around and within the plots where the guidance is achieved or predicted to be marginally exceeded (i.e. can likely comply with other measures adopted).

Site Wide Analysis

9.203 Figure 9.23 illustrates that predicted sound pressure levels (at ground floor level) across the site once it is fully operational (based on the Illustrative Masterplan). The predictions, based on the measured worst-case noise levels, indicate that with the introduction of buildings across the site that a variety of spaces close to each building would meet the guidance ambient noise levels for external amenity.

Figure 9.23 Completed Site Wide Analysis – Full Opening with Illustrative Masterplan



Phase 2A (Plots F2, F3 and G)

9.204 Figure 9.24 and Figure 9.25 show that the building forms in Phase 2A (without other buildings present) can be used to create pockets at ground level where the guidance in ProPG/BS8233 is achieved (green) or marginally exceeded (yellow), where other measures such as fences and planting could be used to reduce sound pressure levels further.

9.205 The images also show that there will be large areas, mainly due to M11, where sound pressure levels will exceed the guidance in ProPG/BS8233. Most of these areas (orange), while exceeding the guidance are expected to provide some levels of amenity to the occupants of the buildings.

9.206 As noted, the analysis is provided on the worst-case sound levels that are measured, and all locations would expect to comply with ProPG/BS8233 at periods when wind directions from the east and south.

Figure 9.24 Amenity Sound Levels – Plot G

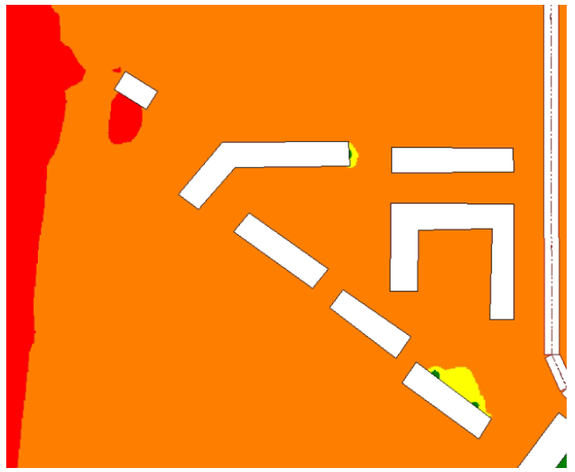


Figure 9.25 Amenity Sound Levels – Plots F2 and F3



Phase 2B (Plots E1, E2 and F1)

9.207 Figure 9.26 to Figure 9.28 show that the building forms in Phase 2B (with only the Phase 1A buildings present) can be used to create pockets at ground level where the guidance in ProPG/BS8233 is achieved (green) or marginally exceeded (yellow), where other measures such as fences and planting could be used to reduce sound pressure levels further.

9.208 The sound levels along the western edge of the site, that overlooks the M11, will be high (red), which will reduce the usability of amenity space along these elevations. However, the negative effect is shown to be offset by the buildings creating large areas on the opposing side where the guidance in ProPG/BS8233 is achieved.

9.209 Similarly the north of Plots E1 and F1 show areas where amenity value exceeds the guidance, though would likely provide some level of amenity. In these instances, it is expected that sound levels will be lower in practice and at the time of occupation, due to the building of Plot D1 (north of E1).

Figure 9.26 Amenity Sound Levels – Plot E1

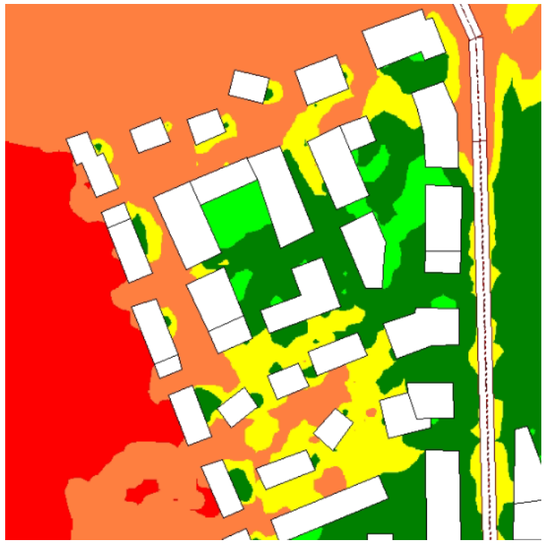


Figure 9.27 Amenity Sound Levels – Plot E2



Figure 9.28 Amenity Sound Levels – Plot F1



Phase 2C (Plots C1, D1 and D2)

9.210 Figure 9.29 and Figure 9.30, like the previous images show that building forms can be used to create suitable conditions to meet the recommendations in ProPG and BS8233.

Figure 9.29 Amenity Sound Levels – Plots C1 and D1

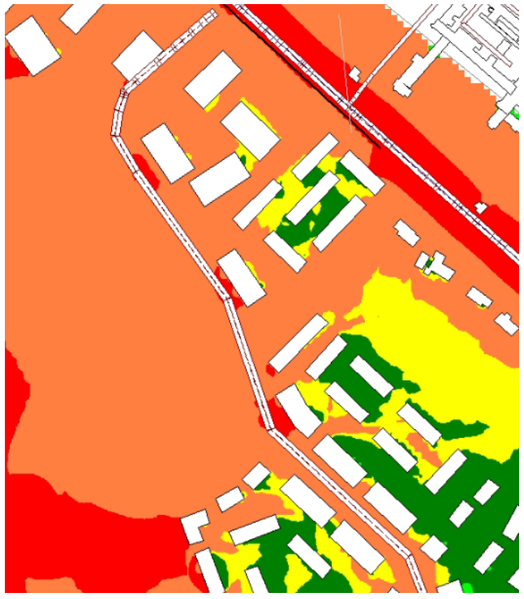


Figure 9.30 Amenity Sound Levels – Plot D2



Phase 3 (Plots B1, B2 and C2)

Figure 9.31 Amenity Sound Levels – Plots B1, B2 and C2



Phase 4 (Plots H1, H2, H3 and J)

9.211 The Phase 4 plots are less exposed to the M11, so all the ground floor areas close to the buildings are predicted to comply with the guidance in ProPG/BS8233.

Figure 9.32 Amenity Sound Levels – Plots H1, H2, H3 and J



Conclusion

9.212 A good acoustic design process has been followed while developing the Illustrative Masterplan, with the iterative process reducing reliance on the acoustic design measures required.

9.213 Each of the Proposed Development plots are exposed to sound pressure levels that mean that further acoustic design is required so that the future occupants of the Proposed Development are not adversely affected by sound. The acoustic conditions, and the required design measures are comparable to those experienced by Phase 1.

9.214 The plots of these phases will come forward in future RMAs which will detail the building orientation, layout and the façade sound insulation requirements. It is through these additional design decisions that appropriate acoustic conditions can be achieved without reliance on screening from buildings i.e. plots can be delivered independently.

9.215 The evaluation of external amenity shows that it is feasible for areas of external amenity to be provided close to each residential plot. The reduced sound levels can be provided through positioning the buildings to reduce the sound levels in key locations.

9.216 Given the above, it is recommended that a planning condition is imposed on the Proposed Development that requires each RMA to include details that show how the building massing, orientation, internal layouts and location of shared external amenities (e.g. community gardens) can come forward to meet the guidance sound levels in ProPG and BS 8233:2014.

9.217 As per the approach detailed herein, the analysis within future RMA is to be provided on the worst-case basis i.e. highest sound levels experienced across the site. This will necessitate long term environmental noise measurements over an extended period, i.e. surveys of at least 7 days and capturing changes in wind direction.

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

9.218 The noise climate is driven by road traffic that is primarily associated with the M11, and as such any changes to the future baseline condition are dependent on changes to traffic. In order for noise levels to change significantly at source would require changes in vehicle flows of >20%, which is unlikely given the current high volume.

9.219 Changes from combustion to electric engines are also unlikely to cause significant changes in noise. This is as the traffic along the M11 was observed during the surveys to be free-flowing with speeds at or near to the national speed limit (70 mph). At these speeds, noise generated by tyres on the road surface is the dominant source of noise from motor vehicles. As tyre noise will remain with electric vehicles, it is unlikely that changes in overall sound level will reduce.

9.220 On this basis, the noise levels currently present are unlikely to be significantly different in the future.

Cumulative Effects Assessment

9.221 This section identifies the effects of the Proposed Development in combination with the effects of the cumulative schemes within the surrounding area, as identified in **ES Volume 1, Chapter 2: EIA Methodology.**

9.222 The schemes that have been considered are those that share common receptors with the Proposed Development and are within 200m from the site. Accordingly, cumulative effects have been evaluated for:

- Plot M4/M5 (22/04989/REM);
- West Cambridge Site (16/1134/OUT);
- Girton College (22/00887/OUT);
- National Institute of Agricultural Botany (C/03/0282); and
- Gusto Mills (24/02324/FUL).

Enabling, Demolition and Construction

Plot M4/M5 (22/04989/REM)

9.223 The reserved matters application for Plot M4/M5 does not include construction noise and vibration analysis. The scheme, being within Phase 1, shares a number of common receptors. However, the majority of construction works on the plots will have been completed prior to the commencement of works on the Proposed Development, so there will not be coincident noisy works happening between the scheme and the Proposed Development. On this basis the addition of this scheme will not change the outcomes reported.

9.224 The future receptors at Plots M4/M5 are expected to be affected by noise/vibration from the Proposed Development as those at Mill House (M), UN Environment World Conservation Centre (N) and/or 147-217 Huntingdon Road (O), i.e. Negligible (not significant).

West Cambridge Site (16/1134/OUT)

9.225 The West Cambridge Site shares common receptors with the Proposed Development at 1-12 Landsdowne Road. Neither the Proposed Development nor West Cambridge Site identified significant effects during construction works, and the residual effects described herein would remain.

Girton College (22/00887/OUT)

9.226 The information submitted to support Girton College application does not include construction noise and vibration analysis. The proposals for Girton College include the building of a new graduate centre and student accommodation, which are shown to be sufficiently far away (over 180m) from common receptors at Huntingdon Road properties (A).

9.227 On this basis, the residual effects predicted in this ES Chapter remain valid.

National Institute of Agricultural Botany (C/03/0282)

9.228 The information submitted to support National Institute of Agricultural Botany application does not include construction noise and vibration analysis. The size of the scheme described in the submitted drawings indicates that notable levels of noise and vibration from the development are unlikely.

9.229 On this basis, the residual effects predicted in this ES chapter remain valid.

Gusto Mills (24/02324/FUL)

9.230 Assessments at Mill House (M) are representative of the potential receptors at Gusto Mills, given the proximity and sensitivity are the same. Accordingly, no new assessments for Gusto Mills are required.

9.231 The information submitted to support Gusto Mills application does not include construction noise and vibration analysis. The size of the scheme described in the submitted drawings indicates that notable levels of noise and vibration from the development are unlikely.

9.232 On this basis, the residual effects predicted in this ES chapter remain valid.

Completed Development

9.233 The future baseline flows include the contributions from the committed schemes. Accordingly, the effects described for the Proposed Development would remain as described.

9.234 There appears to be no new sports pitch noise associated with the cumulative schemes that would affect the results from the assessment.

9.235 The noise generated by the building services plant associated with the cumulative schemes are expected to meet the same requirements as the Proposed Development. Accordingly, there will be no cumulation of noise at the closest shared receptors and the effects described for the Proposed Development would remain, i.e. Negligible (Not Significant).

LIKELY SIGNIFICANT EFFECTS

9.236 Significant effects are expected during construction, either specific periods of high activity, when piling is located close to receptors or due to the removal of the Phase 1 soil heaps that result in reduced screening from the M11 on receptors and therefore higher road traffic noise levels.

9.237 The significant effects will extend for prolonged periods and where feasible mitigation will be adopted by the Contractors that will reduce the noise/vibration due to construction activity.

9.238 The significant effect experienced at one receptor group during the 2027 traffic scenario cannot be reliably reduced by mitigation measures. However, the increase in sound level will be temporary, given that the new houses that are to be built in Phase 2 will provide sufficient screening so that in the long term a reduction in road traffic noise is experienced at the affected receptors.

9.239 Significant effects are not expected during the operation of the Proposed Development. However, it is recommended that further analysis of the road traffic noise is completed for the Phase 4 access road (Garrod

Street) so that they are avoided. The analysis will need to take place to confirm whether low surface road surfaces are required.

Chapter 10: Built Heritage

TRIUM

BUILT HERITAGE	
AUTHOR	Stantec UK Ltd
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Built Heritage** Annex 1: Built Heritage Technical Appendix
KEY CONSIDERATIONS	This ES chapter has assessed the likely significant effects of the Proposed Development on both designated and non-designated built heritage assets within the site and study area (including statutorily Listed Buildings, Conservation Areas, Registered Parks and Gardens, and locally listed buildings), and the potential indirect effects on their particular sensitivity/significance through change within their settings. For the purposes of this ES chapter, the term 'built heritage' refers to the above-ground heritage assets.
CONSULTATION	An EIA Scoping Report was prepared and submitted to Greater Cambridge Shared Planning Service (GCSPS) in November 2024 (**ES Volume 3, Appendix: EIA Methodology – Annex 1**). An EIA Scoping Opinion was subsequently received on 23 January 2025 and is included within **ES Volume 3, Appendix: EIA Methodology – Annex 2**. This generally agreed with the scope of this ES chapter. The EIA Scoping Opinion requested: *"There are a number of additional heritage assets within 1.5km of the site, including Cambridge Castle Mound SAM, and a number of Grade II* listed buildings, and due to the relatively flat topography there is potential for the development to affect assets at some distance from the site. The ES should clearly demonstrate the extent of the study area is of an appropriate size."* The extent of the study area has been clearly explained and defined in paragraph 10.6 and 10.7 and throughout this ES chapter.

ASSESSMENT METHODOLOGY

Basis of Assessment

10.1 This chapter of the Environmental Statement presents an assessment of the likely significant environmental effects of the Proposed Development in relation to built heritage. The assessment considers potential impacts arising during the enabling, demolition, construction, and operation of the Proposed Development. Where relevant, additional mitigation measures have been identified where adverse effects have been concluded.

10.2 This chapter does not consider the archaeological resource in relation to the site. Archaeology was scoped out of the Environmental Statement as confirmed in the GCSPS EIA Scoping Opinion (**ES Volume 3, Appendix: EIA Methodology – Annex 2**).

10.3 This chapter is supported by a Built Heritage Technical Appendix (BHTA), included within **ES Volume 3, Appendix: Built Heritage – Annex 1**

10.4 Due to the outline nature of the planning application, the assessment presented in this ES chapter is based on the maximum parameters set out within the Parameters Plans for the Proposed Development, which have been informed by the practical and technical requirements of the Proposed Development with regards to the scale, layout, and land use of the proposed built form.

10.5 The planning application sets out height zones which set the building height parameters of the Proposed Development. The height zones set out maximum allowable building heights, with the tallest elements concentrated in the central areas of the site. While the maximum height proposed is up to 52m Above Ordnance Datum (AOD), this represents an upper limit, and the actual heights of buildings will be confirmed during the Reserved Matters Application (RMA) stage. The parameters provide flexibility within the outline application to ensure the eventual design responds appropriately to operational and contextual considerations.

Defining the Baseline

Study Area

10.6 An initial study area comprising of the site and a 750m study area for designated heritage assets and 250m study area for non-designated heritage assets has been used to assess the potential impact arising from the Proposed Development.

10.7 A review of the receptors within a wider study area, up to 1.5km, was undertaken. Following the site visit, it was determined that those receptors in the wider area, such as Castle Mound and various highly graded Listed Buildings, did not have any associative links with the site and as a result of the intervening built form, landscape features and topography, that they would not experience any change to their townscape setting that would affect their heritage sensitivity.

10.8 The study area assessed is considered appropriate and proportionate in response to the scale and nature of the Proposed Development, the landscape character of the site and its surroundings, combined with the interest of the receptors. This was confirmed in the Scoping Opinion and follows the approach consistent with best practice guidance set out within Historic England Advice Note 3: The Setting of Heritage Assets (2017) (GPA3)[1].

Site Visit

10.9 A site visit was undertaken in February 2025; the visit included a walkover of the publicly accessible areas across the site and its immediate surroundings. The purpose of which was to undertake a historic environment assessment, and to collect the photographic record of the baseline.

10.10 Further site visits have been undertaken by the landscape consultants, refer to **ES Volume 2: Landscape and Visual Impact Assessment**.

Evolution of the Baseline

10.11 No future changes to the baseline conditions of the built heritage receptors themselves are anticipated. Some plots within Phase 1 of the 2013 OPP are under construction and several areas within the wider site have been cleared. Refer to **ES Volume 1, Chapter 2: EIA Methodology** for further information.

10.12 In undertaking the assessment, the potential for change within the setting of the identified built heritage receptors scoped into the assessment will be considered, to enable further understanding. This is undertaken in the context of the future baseline, without the Proposed Development having been built out. This will include consideration of relevant identified cumulative schemes as agreed with the Local Planning Authority.

Impact Assessment Methodology

10.13 For the purposes of this ES chapter, standard EIA terminology has been used in place of the National Planning Policy Framework (NPPF)[2] terminology. The term 'heritage receptor' is therefore used in lieu of 'heritage asset' and 'sensitivity' in lieu of 'significance'.

10.14 The application of the EIA methodology utilises best practice guidance and professional judgement to establish the sensitivity / value of a receptor and the magnitude of impact.

10.15 This section sets out the proposed approach and methodology for undertaking an assessment of the likely significant effects of the Proposed Development on the identified built heritage receptors.

10.16 The thresholds for 'significant effects' on heritage receptors are determined by considering the sensitivity / value of receptors alongside the magnitude of impact that will be experienced. Effects that are graded as being major

[1] *https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/*

[2] *National Planning Policy Framework - Annex 2: Glossary - Guidance - GOV.UK*

or moderate are considered significant with respect to the EIA Regulations[3]. Effects that are graded as negligible or minor constitute effects that are considered not significant (along with 'no change' effects).

10.17 The sensitivity / value of a heritage receptor is determined by its designated status and desk-based research to inform a professional judgement in relation to its heritage interest, accounting for factors including the likely nature, date, extent, survival, condition, rarity, and group value along with an assessment of the contribution its setting makes to this value.

10.18 The assessment of setting has been undertaken with reference to the assessment steps set out in GPA3. The following sources of information have been consulted to inform this ES chapter:

- The BHTA (**ES Volume 3, Appendix: Built Heritage – Annex 1**);
- Online review of the local heritage list[4];
- Online review of the Cambridgeshire Historic Environment Record (HER), via Heritage Gateway[5];
- Historic England's National Heritage List for England (NHLE)[6];
- Regional, borough, district or local landscape character assessments and relevant supplementary design or planning guidance (SPD or SPG);
- Relevant Conservation Area Appraisals;
- National Planning Policy Framework, 2024 (NPPF)[7];
- Historic England Local Heritage Hub and Archives; and
- Google Earth Pro for aerial photography.

10.19 The scope of this assessment includes the following designated and non-designated heritage receptors:

- Designated heritage receptors include:
  - World Heritage Sites;
  - Scheduled Monuments;
  - Listed Buildings (listed as grades I, II and II*);
  - Registered Parks and Gardens; and
  - Conservation Areas.
- Non-designated heritage receptors may include:
  - Locally listed buildings, buildings of local merit;
  - Locally listed historic parks and gardens;
  - Monuments listed in the HER; and
  - Other assets identified by the LPA during the planning process with sufficient heritage interest to merit consideration.

Enabling, Demolition and Construction

10.20 The enabling, demolition and construction phase is linked with delivering the access, new uses and the architectural and landscape design of the Proposed Development. The likely effects on the sensitivity of built heritage assets would vary according to the nature of the construction works over time, with certain operations having more perceptible effects (visual and audible etc.) than others as a result of the following processes:

- Enabling and groundworks;
- Demolition of buildings on site where required;
- Site preparation and construction of infrastructure;
- Construction of buildings and structures including (depending on the phase) residential, sports pitches, and mixed-use non-residential land use; and
- Fit out of properties and landscaping.

10.21 As a result of these processes, there will primarily be localised, transient and temporary effects lasting for the anticipated construction phase. The risk of such effects will be mitigated in the context of the embedded mitigation described in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction** and within the Outline Construction and Environmental Management Plan (CEMP). It is anticipated that the Proposed Development would adhere to construction best practice and provide updates on the construction programme to the local community.

10.22 The core construction activities would be limited to within the site and would be temporary in duration. With time, the construction effects would transition to the operational phase effects as the Proposed Development nears completion and the completed buildings obscure views of those elements which remain under construction.

10.23 Direct and indirect construction impacts arising from construction activities directly affecting receptors or within parts of their settings have been assessed.

Phasing

10.24 This assessment has taken into account the phasing shown in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**. The enabling, demolition and construction works are anticipated to be completed in phases over a 10-year period (2027-2037). In the most part, the early phases of development are located at a distance from the majority of the built heritage assets and in many instances will be occurring beyond the existing built form present between the receptors and the site. Where phases are located within proximity to receptors, such as along Madingley Road (Phase 3) any impacts will be temporary for a period of 28 months.

10.25 Phase 4 has the greatest potential to result in indirect impacts to the setting of built heritage receptors. However, again, during this phase any impacts will be temporary for a period of 56 months.

10.26 Overall, the effects to built heritage receptors will occur throughout the enabling, demolition and construction stage, regardless of phasing. Phasing has therefore not been considered further within this ES chapter.

Completed Development

10.27 Effects resulting from the Proposed Development, when complete and operational, are determined on the basis of supporting design information including:

- Parameter Plans for the Proposed Development;
- Design Code for the Proposed Development;
- Design and Access Statement ('DAS'); and
- The Landscape and Visual Impact Assessment has also been reviewed and cross-referenced where appropriate, to assist in coming to a view on the effect of the Proposed Development upon the sensitivity of these built heritage assets.

10.28 Direct and indirect operational impacts have been assessed in relation to the relevant built heritage assets. Direct impacts arise from physical change to the fabric or features of relevant built heritage receptors. Indirect impacts arise from the change in character of part of the landscape or townscape setting of the relevant built heritage receptors.

[3] *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017*
[4] *Home - Cambridgeshire's Local Heritage List*
[5] *https://www.heritagegateway.org.uk/gateway/chr/default.aspx*
[6] *Search the List – Find listed buildings, monuments, battlefields and more | Historic England*
[7] *National Planning Policy Framework*

Assumptions and Limitations

10.29 The following assumptions and limitations apply to this assessment:

- The baseline assessment has been based on information readily available at the time of undertaking the assessment;
- The baseline assessment relies on the accuracy of secondary source data. There is always some degree of uncertainty in relation to these sources; and
- During the visit to the site and surrounding area, weather conditions, the time of day and seasonal factors influenced the visual assessment and photographic record of the environment.

10.30 Overall, the existing baseline information is deemed sufficient to enable a broad assessment of environmental impact to be made. In the context of the previous land raising and clean capping, the existing data is considered sufficient for the purposes of EIA. The following section details the heritage receptors located within the site as well as in the study area.

Methodology for Defining Effects

10.31 There are no mandatory published guidelines offering a general methodology for the preparation of the assessment of likely significant effects on cultural heritage from development under the EIA Regulations.

10.32 The 2021 IEMA Principles of Cultural Heritage Impact Assessment in the UK[8] provide a series of principles to guide the approach to assessment but does not set out a defined methodology.

10.33 The International Council on Monuments and Sites (ICOMOS) issued guidance on Heritage Impact Assessments for Cultural World Heritage Properties in 2011[9]. Although specifically addressing World Heritage Sites and development impacts on their Outstanding Universal Value, the document provides a useful approach to the assessment and evaluation of impacts. However, this guidance was updated in 2022, and it no longer provides a matrix for assessment. As such, the methodology used within this ES chapter for assessing predicted impacts and effects upon the heritage receptors follows this guidance which has been amended where relevant.

Receptors and Receptor Sensitivity

10.34 The methodology for appraising sensitivity in this ES Chapter is an exercise of professional judgement informed by best practice industry guidance including, Conservation Principles (Historic England (2008)[10], British Standard BS7913:2013: Guide to the Conservation of Historic Buildings[11], and Good Practice Advice Note 2: Managing Significance in Decision-Taking in the Historic environment, 2015 (GPA2)[12] and evidence base comprising desk-top research of primary and secondary source material together with a site visit.

10.35 Built heritage receptors can include historic buildings, structure, standing remains, and historic landscapes. Useful criteria were provided in the 2011 ICOMOS guidance for establishing the sensitivity for heritage receptors. It is acknowledged that this guidance has since been updated but nevertheless provides a useful framework to assess heritage receptors. Each heritage receptor is ascribed a value in accordance with a four-point scale as shown in Table 10.1 below.

Table 10.1 Receptor Sensitivity Description

Sensitivity	Receptor Categories
High	• Remains of inscribed international value, such as World Heritage Sites. • Grade I and grade II* Listed Buildings. • Grade I and grade II* Registered Parks and Gardens. • Scheduled Monuments. • Registered Battlefields. • Conservation Areas containing important buildings; and • Undesignated archaeological receptors of clear national or international value.
Medium	• Grade II Listed Buildings. • Conservation Areas. • Grade II Registered Parks and Gardens. • Undesignated buildings, monuments, sites, or landscapes that can be demonstrated to have heritage value equivalent to the designation criteria; and • Designated or undesignated archaeological remains or sites that have regional interest.
Low	• Locally listed buildings as recorded on a local authority list. • Non-designated buildings, monuments, sites, or landscapes that can be demonstrated to have heritage value equivalent to the local listing criteria; and • Archaeological remains of limited value but with a potential to have interest at a local level.
Very Low	• Buildings, monuments, sites, or landscapes identified as being of negligible or no historic, evidential, aesthetic, or communal interest; and • Archaeological resources that have little or no surviving archaeological interest.

Magnitude of Impact

10.36 In considering the potential magnitude of an impact, a professional judgement has been made about the receptor's susceptibility to change as a result of the Development. Table 10.2 below sets out criteria that has been used to determine the magnitude of an impact, which can vary from 'major to 'no change'.

Table 10.2 Magnitude of Impact Matrix

Magnitude of Impact	Criteria for Assessing Impact
Major	• Change such that the value of the receptors is totally altered or destroyed, and. • Comprehensive changes to setting (where this affects the value of the receptors).
Moderate	• Change to the fabric of the receptors, such that it is significantly modified; and • Change to the setting such that it is significantly modified.
Minor	• Change to the receptors, such that the receptors are slightly different; and. • Slight changes to setting (where this affects the value of the receptors).
Negligible	• Little change to the fabric or setting that would materially harm value, approximating to a 'no change' situation.
No Change	• No change to fabric or setting that would harm significance.

Defining the Effect

10.37 Effects on the sensitivity of built heritage receptors can be either at 'site' or 'local' level, i.e. those affecting the site and receptors within the study area. Effects upon the sensitivity of built heritage receptors within the local

[8] CD-7-19-Principles-of-Cultural-Heritage-Impact-Assessment-2021.pdf
[9] icomos_guidance_on_heritage_impact_assessments_for_cultural_world_heritage_properties.pdf
[10] Conservation Principles, Policies and Guidance | Historic England
[11] *The British Standards Institution 2013.*
[12] Managing Significance in Decision-Taking in the Historic Environment

planning authority boundary outside of the study area are at a 'district' level. Effects on the sensitivity of built heritage receptors within the wider context are at a 'regional' level, whilst those which affect the sensitivity of built heritage receptors in different parts of the country are considered being at a 'national' level.

10.38 For the purposes of this assessment, having regard to the context of the site and the heritage receptors in the study area, long-term effects arising from the Proposed Development are those lasting 12 or more years, medium-term effects are 5–12 years and short term effects are 1–5 years. Those effects on the sensitivity of the built heritage receptors relating to the demolition and construction works, which last for a set-period of time, are defined as temporary. The effects on the sensitivity of built heritage receptors arising from the completed and operational Proposed Development are classed as permanent effects. A direct effect on a heritage receptor is likely to result from changes to the physical fabric of the receptor. An indirect impact is likely to result from changes to the receptor's setting.

10.39 The assessment to determine the scale and significance of the effect uses a matrix that considers the sensitivity / value of the receptor against the magnitude of impact from the Proposed Development. The significance of effect is determined by the interaction of the receptor's sensitivity to change and the magnitude of impact (change) (Table 10.3). Effects that are graded as major or moderate are considered 'significant' in EIA terms.

10.40 Consideration is also given to the type of effect in terms of whether it is adverse, or beneficial

- Adverse: characteristics, features or elements of a heritage asset are lost, damaged or altered, negative change in attribute quality, or increased risk or vulnerability to negative impacts occurring;
- Beneficial: characteristics, features, elements, or attribute quality of a heritage asset are improved or restored, or there is a reduced risk of negative impacts occurring; and
- Neutral effects are not considered to be either adverse or beneficial.

10.41 Therefore, the possible effect can be one of the following:

- Major (adverse or beneficial);
- Moderate (adverse or beneficial);
- Minor (adverse or beneficial); and
- Negligible (adverse or beneficial).

10.42 Certain effects will also result in '**no change**' and where relevant this will be stated. The table below has been adapted from the previously withdrawn Design Manual for Roads and Bridges (DRMB) [13] 'Significance of Effects' matrix to accord with the terminology described above. Section 3, Part 2 addressed the assessment of potential impacts on heritage assets, including historic buildings, landscapes, and archaeological remains. It is considered that 'significant' effects are those that are scored as moderate or higher. This illustrates the interaction between impact magnitude and receptor sensitivity / value.

Table 10.3 Matrix for Determining the Scale of the Effect

Magnitude of Impact	Sensitivity			
	High	Medium	Low	Not Significant
Major	Major Adverse / Beneficial	Major Adverse / Beneficial	Moderate Adverse / Beneficial	Minor Adverse / Beneficial
Moderate	Major Adverse / Beneficial	Moderate Adverse / Beneficial	Minor Adverse / Beneficial	Negligible Adverse / Beneficial
Minor	Moderate Adverse / Beneficial	Minor Adverse / Beneficial	Minor Adverse / Beneficial	Negligible Adverse / Beneficial
Negligible	Minor Adverse / Beneficial	Minor Adverse / Beneficial	Negligible	Negligible
No Change	No Effect	No Effect	No Effect	No Effect

[13] 11s3p09.pdf

BASELINE CONDITIONS

Current Baseline Conditions

10.43 A desktop review of the site and its environs identified 125 designated heritage receptors within a 750m study area of the site boundary, including several Grade II* Listed Buildings and six Conservation Areas. The proposed study area is considered to be appropriate based on the scale of the Proposed Development, combined with the intervening built form and landscape features. There are no built heritage receptors located within the site boundary.

10.44 The heritage baseline may also include 'non-designated heritage receptors', including locally listed buildings. The Greater Cambridge Shared Planning Local List has been reviewed and a 250m study area applied in relation to the Proposed Development. This is considered appropriate given the lower level of sensitivity of non-designated heritage assets as well as the fact that the majority of these assets are located within an urban townscape setting and most will not experience any meaningful change to their setting. There are no locally listed buildings within the site boundary. There are several locally listed buildings within close proximity to the site, within the 250m study area.

10.45 The location of all built heritage receptors within the study area, both designated and non-designated, is shown on **ES Volume 3, Appendix: Built Heritage – Annex 1.** A gazetteer of all heritage receptors located within the study areas is provided within **ES Volume 3, Appendix: Built Heritage – Annex 1.**

RECEPTORS AND RECEPTOR SENSITIVITY

Scoping

10.46 In accordance with Step 1 of the methodology set out in GPA3, built heritage receptors, both designated and non-designated, within the site and the study areas have been through a scoping exercise. The majority of built heritage receptors within the study area have been scoped out of the assessment. This is due to the fact that no historical or functional connections have been identified between the site and such receptors, meaning that the site does not contribute to their heritage sensitivity. In addition, in many instances the separation distance, intervening built form, landscape features, or topography, means that they will not experience any impact as a result of the Proposed Development.

10.47 The initial scoping assessment utilised modern and historic mapping, aerial photography, Google Earth, the National Heritage List, and the Historic Environment Record to identify which built heritage receptors identified within the study area which may include the Proposed Development area as part of their setting.

Existing

10.48 As a result of this scoping process, the built heritage receptors in Table 10.4 and Table 10.5 below have been identified through desk-based review and the site visit as having the potential to be affected by the Proposed Development and were scoped into this assessment. These receptors have been assessed in **ES Volume 3, Appendix: Built Heritage – Annex 1**, where details of the designation entries are provided in full. Their location is shown on Figure 10.1.

Figure 10.1 Location of Scoped In Heritage Receptors

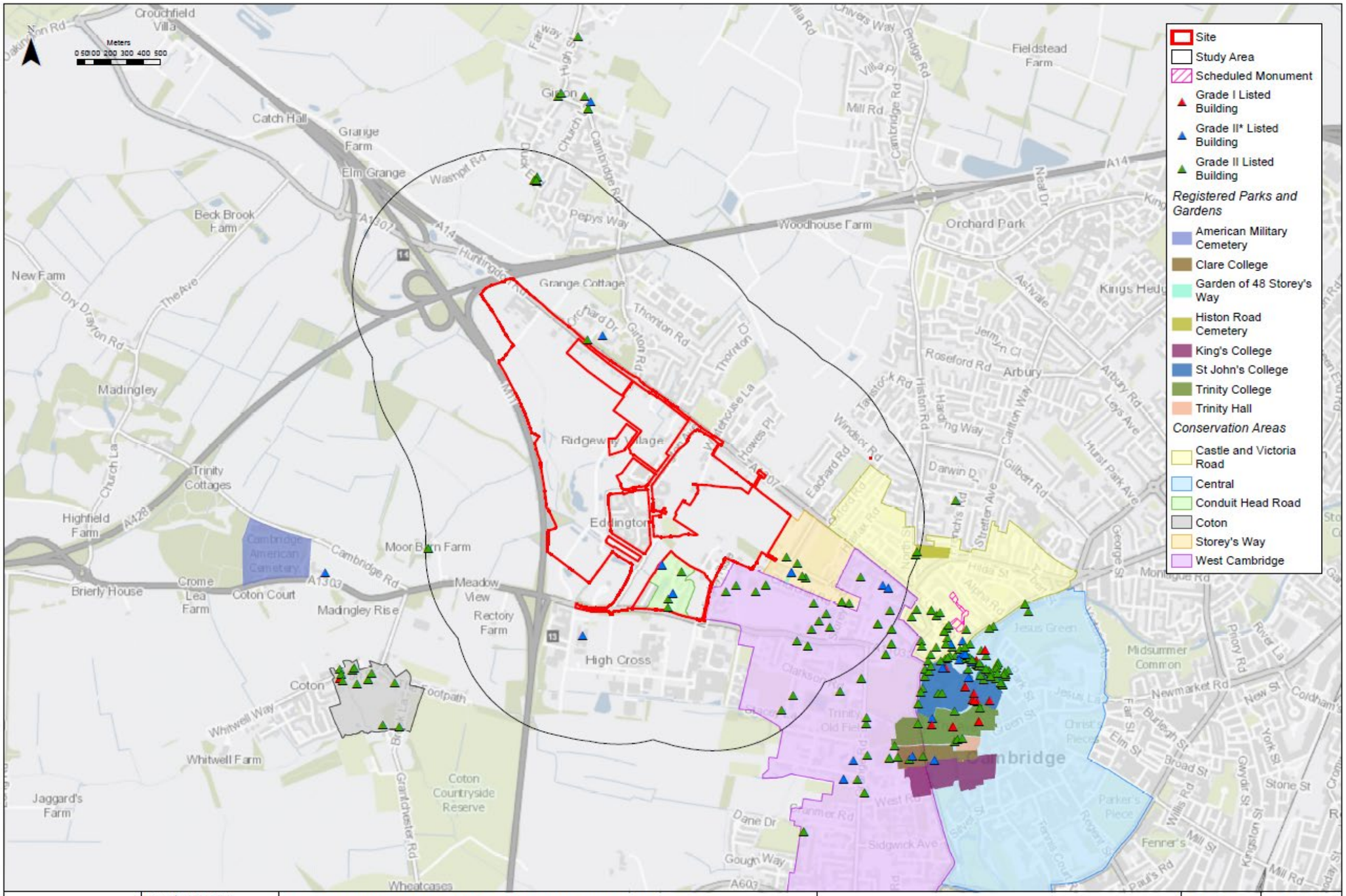


Table 10.4 Designated Built Heritage Receptors Scoped in within 750m Study Area

Receptor Name	Grade	Sensitivity	Historic England List Entry No
Girton College	II*	High	1331334
Lodge, Girton College	II	Medium	1127293
Shawms	II*	High	1268363
Spring House	II	Medium	1380900
Schlumberger Gould Research Centre and attached perimeter wall to the north	II*	High	1438644
Northumberland dome at the Observatory	II	Medium	1126157
The Observatory	II	Medium	1126156
Chapel, Churchill College	II	Medium	1331925
Research Flats	II	Medium	1331924
30 Storey's Way	II	Medium	1343647
29 Storey's Way	II	Medium	1331882
48 Storey's Way	II	Medium	1126090
Garden of 48 Storey's Way	II Registered Park and Garden	High	1422759
54 Storey's Way	II	Medium	1126091
56 Storey's Way	II	Medium	1068856
Storey's Way	Conservation Area	Medium	N/A
Conduit Head Road	Conservation Area	Medium	N/A
Willow House	II*	High	1331936
Salix	II	Medium	1227614
White House	II	Medium	1126037
American Cemetery	I Registered Park and Garden	High	1001573
Histon Road Cemetery	II* Registered Park and Garden	High	1001569
West Cambridge	Conservation Area	Medium	N/A
Howes Place	Conservation Area	Medium	N/A

Table 10.5 Non-Designated Built Heritage Receptors within 250m Study Area

Receptor Name	Sensitivity	Local List Reference
52 Storey's Way	Low	BLI 0401
25 Storey's Way	Low	BLI 0398
44 Storey's Way	Low	BLI 0400
34 Storey's Way	Low	BLI 0399
Mortuary Chapel of All Souls, All Souls Lane	Low	BLI 0004
141 Huntingdon Road ('Wayside', Storey's Way)	Low	BLI 0176
143-145 Huntingdon Road	Low	BLI 0177
136 Huntingdon Road	Low	BLI 0174
138 Huntingdon Road	Low	BLI 0175
162 Huntingdon Road	Low	BLI 0178
171 Huntingdon Road	Low	BLI 0179
173 Huntingdon Road	Low	BLI 0180
183 Huntingdon Road	Low	BL1 0181
National Institute of Agricultural Botany (NIAB), Huntingdon Road	Low	BLI 0171
Nos. 1-14 Howes Place	Low	BLI
Conduit Rise, Conduit Head Road	Low	BLI 0089
Clements End, Conduit Head Road	Low	BLI 0088

EMBEDDED MITIGATION

10.49 Embedded mitigation measures are part of an iterative EIA process and have been developed through consultation. Mitigation of adverse effects, primarily on the setting of heritage receptors, include the careful consideration of the positioning of green infrastructure, land use areas and associated infrastructure, and building height parameters in relation to topography and existing built form.

10.50 The embedded mitigation measures which are relevant to the enabling, demolition, construction, and operational phases include:

- The establishment of green infrastructure and public open space throughout the site, including the incorporation of a network of green spaces utilising existing site features alongside the creation of Shared Gardens in order to better integrate the Proposed Development with the existing Phase 1 development and the surrounding context. The proposed landscape approach is shown in **ES Volume 1, Chapter 4: Proposed Development** (Green Infrastructure, Play and Open Space Parameter Plan: PP2-10002);
- The scale of the Proposed Development has been informed by a review of the surrounding context, including the relevant heritage constraints. The Proposed Maximum Heights Parameter Plan (PP6-10006) shows those areas of greatest scale located centrally within the northern part of the site, at greatest distance from the identified heritage receptors; and
- Whilst the maximum parameters for the Proposed Development are up to eight storeys, built form closest to the receptors has been pulled back and reduced in scale to the edges of the site. There is sufficient separation distance between the site and the receptors to ensure that the Proposed Development will not compete visually with the receptors.

10.51 A Design Code has been prepared to support the submission of the OPA which includes a series of design principles to guide the subsequent RMAs.

10.52 The Design Code forms part of the committed mitigation and establishes high-level principles relating to architectural design, public realm, and access to ensure the scheme integrates successfully into the surrounding landscape and minimise the potential impact on the setting of the heritage receptors.

POTENTIAL EFFECTS

Enabling, Demolition and Construction

10.53 The enabling, demolition, and construction phase will not result in any direct impacts to the built heritage receptors, such that any impact would arise through a temporary change to its setting during this phase.

10.54 The enabling, demolition, and construction phase would give rise to temporary changes within the setting of this built heritage receptors, arising from construction activities. The construction of the Proposed Development is anticipated to commence in Q4 of 2026, subject to gaining planning permission. Construction will be phased over approximately ten years.

10.55 The principal activities that have the potential to have an impact upon built heritage receptors during the enabling, demolition, and construction phase include:

- Enabling works comprising site clearance, and ground modelling works.
- Introduction of new temporary elements, including material stockpiles, haul roads, site hoarding and security fencing and surface water management measures.
- Demolition of existing structures within the site and removal of materials.
- Construction of new buildings and associated infrastructure.
- Arboricultural works, including the protection of trees/vegetation to be retained and removal of trees/vegetation where required; and
- Presence and increased movement of construction traffic, plant, and machinery, some of which may be large-scale, within the site, including for excavation and foundation activities (such as drilling or piling).

10.56 The built heritage effects during the enabling, demolition, and construction phase to the heritage receptors is set out in detail in Table 4.1 of **ES Volume 3, Appendix: Built Heritage – Annex 1**. The assessment identifies that none of the built heritage receptors would experience a significant effect during the enabling, demolition, and construction phase. This is as a result of the temporary nature of the works, the phased delivery of the construction phase, and in some instances the separation distance and intervening built form or landscape features.

10.57 A summary of the effects during the enabling, demolition, and construction phase is provided in Table 10.6 below.

Table 10.6 Enabling, Demolition, and Construction Effects

Name	Asset Type	Demolition and Construction Effects
Designated Built Heritage Receptors		
Girton College	Grade II* Listed Building	The sensitivity of Girton College Listed Building is considered to be high. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
Lodge, Girton College	Grade II Listed Building	The sensitivity of the Lodge at Girton College is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be minor adverse. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
Shawms	Grade II* Listed Building	The sensitivity of Shawms is considered to be high. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
Spring House	Grade II Listed Building	The sensitivity of Spring House is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be minor. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant)
Schlumberger Gould Research Centre and attached perimeter wall to the north	Grade II* Listed Building	The sensitivity of the Schlumberger Gould Research Centre is considered to be high. The receptor would not experience any change as a result of the enabling, demolition, and construction phase. Therefore, there will be No Effect to this receptor.
Northumberland Dome at the Observatory	Grade II Listed Building	The sensitivity of the Northumberland Dome at the Observatory is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Negligible (Not Significant).
The Observatory	Grade II Listed Building	The sensitivity of the Observatory is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Negligible (Not Significant).
Chapel, Churchill College	Grade II Listed Building	The sensitivity of the Chapel at Churchill College is considered to be medium. The receptor would not experience any change as a result of the enabling, demolition, and construction phase. Therefore, there is likely to be No Effect to this receptor.
Research Flats	Grade II Listed Building	The sensitivity of the Chapel at Churchill College is considered to be medium. The receptor would not experience any change as a result of the enabling, demolition, and construction phase. Therefore, there is likely to be No Effect to this receptor.
30 Storey's Way	Grade II Listed Building	The sensitivity of No. 30 Storey's Way is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
29 Storey's Way	Grade II Listed Building	The sensitivity of No. 29 Storey's Way is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
48 Storey's Way	Grade II Listed Building	The sensitivity of No. 48 Storey's Way is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
54 Storey's Way	Grade II Listed Building	The sensitivity of No. 54 Storey's Way is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
56 Storey's Way	Grade II Listed Building	The sensitivity of No. 56 Storey's Way is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
Garden of 48 Storey's Way	Grade II Registered Park and Garden	The sensitivity of the Garden of 48 Storey's Way RPG is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
Storey's Way	Conservation Area	The sensitivity of the Storey's Way Conservation Area is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be minor. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
Conduit Head Road	Conservation Area	The sensitivity of the Conduit Head Road Conservation Area is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be Minor. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
Willow House	Grade II* Listed Building	The sensitivity of Willow House is considered to be high. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
Salix	Grade II Listed Building	The sensitivity of Salix is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
White House	Grade II Listed Building	The sensitivity of White House is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
American Cemetery	Grade I Registered Park and Garden	The sensitivity of the American Cemetery RPG is considered to be high. The receptor would not experience any change as a result of the

Name	Asset Type	Demolition and Construction Effects
		enabling, demolition, and construction phase. Therefore, there is likely to be No Effect to this receptor.
Histon Road Cemetery	Grade II* Registered Park and Garden	The sensitivity of the Histon Road Cemetery RPG is considered to be high. The receptor would not experience any change as a result of the enabling, demolition, and construction phase. Therefore, there will be No Effect to this receptor.
West Cambridge	Conservation Area	The sensitivity of the West Cambridge Conservation Area is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be minor. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
Howes Place	Conservation Area	The sensitivity of the West Cambridge Conservation Area is considered to be medium. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
Non-Designated Built Heritage Receptors		
52 Storey's Way	Locally Listed Building	The sensitivity of No. 52 Storey's Way is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Negligible (Not Significant).
25 Storey's Way	Locally Listed Building	The sensitivity of No. 25 Storey's Way is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Negligible (Not Significant).
44 Storey's Way	Locally Listed Building	The sensitivity of No. 44 Storey's Way is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Negligible (Not Significant).
34 Storey's Way	Locally Listed Building	The sensitivity of No. 34 Storey's Way is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Negligible (Not Significant).
Mortuary Chapel of All Souls, All Souls Lane	Locally Listed Building	The sensitivity of the Mortuary Chapel of All Souls is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be minor. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
141 Huntingdon Road ('Wayside', Storey's Way)	Locally Listed Building	The sensitivity of No. 141 Huntingdon Road is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be minor Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
143-145 Huntingdon Road	Locally Listed Building	The sensitivity of Nos. 143-145 Huntingdon Road is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be minor Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
136 Huntingdon Road	Locally Listed Building	The sensitivity of No. 136 Huntingdon Road is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Negligible (Not Significant).
138 Huntingdon Road	Locally Listed Building	The sensitivity of No. 138 Huntingdon Road is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Negligible (Not Significant).
162 Huntingdon Road	Locally Listed Building	The sensitivity of No. 162 Huntingdon Road is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be minor. Therefore, there is likely to be an
		indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
171 Huntingdon Road	Locally Listed Building	The sensitivity of No. 171 Huntingdon Road is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be minor. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
173 Huntingdon Road	Locally Listed Building	The sensitivity of No. 173 Huntingdon Road is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be minor. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor Adverse (Not Significant).
183 Huntingdon Road	Locally Listed Building	The sensitivity of No. 183 Huntingdon Road is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be minor. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Minor (Not Significant).
National Institute of Agricultural Botany (NIAB), Huntingdon Road	Locally Listed Building	The sensitivity of the NIAB is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Negligible (Not Significant).
Nos. 1-14 Howes Place	Locally Listed Building	The sensitivity of Nos. 1-14 Howes Place is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Negligible (Not Significant).
Conduit Rise	Locally Listed Building	The sensitivity of Conduit Rise is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Negligible (Not Significant).
Clements End	Locally Listed Building	The sensitivity of Clements End is considered to be low. The magnitude of impact during the enabling, demolition, and construction phase is considered to be negligible. Therefore, there is likely to be an indirect, temporary, medium-term effect which is considered to be Negligible (Not Significant).

Operational Phase

10.58 The built heritage effects during the operational phase to the heritage receptors is set out in detail in Table 4.1 of **ES Volume 3, Appendix: Built Heritage – Annex 1**. The Proposed Development does not include any direct works to the built heritage receptors and therefore there are no direct impacts arising from the operational phase. Any impacts would therefore be limited to indirect impacts resulting from potential effects to the setting. A summary of the effects during the operational phase is provided below.

Table 10.7 Operational Effects

Name	Operational Effects
Designated Built Heritage Receptors	
Girton College	The submitted Parameter Plans show careful consideration to the layout, scale, and landscaping in order to limit any potential impact. Built form is located to the south of Huntingdon Road, beyond the existing row of residential properties. Those buildings of greater scale are located centrally within the site in order to help minimise visual impact. Glimpsed view of the roofline of Girton College are possible across the site, from the M11 to the south. However, these views are not designated, and the building does not appear as a landmark within these views, and they do not contribute to the appreciation of the collegiate character of the receptor in its campus setting. Overall, the resulting impact on the sensitivity (high) of the receptor will be reduced as a result of the separation distance, intervening mature landscaping and topography of the site. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).

Name	Operational Effects
Lodge, Girton College	The submitted Parameter Plans show careful consideration to the layout, scale, and landscaping in order to limit any potential impact. Built form is located to the south of Huntingdon Road, beyond the existing residential properties and to the northwest of the receptor. Those buildings of greater scale are located centrally within the site in order to help minimise visual impact. Overall, the resulting impact on the sensitivity (medium) of the receptor will be reduced as a result of the separation distance, intervening mature landscaping and topography of the site. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
Shawms	The site is not considered to make any contribution to the sensitivity (high) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the intervening boundary planting which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
Spring House	The site is not considered to make any contribution to the sensitivity (medium) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the intervening boundary planting which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
Schlumberger Gould Research Centre and attached perimeter wall to the north	Given the separation distance from the site, combined with the existing landscape features and built form, the receptor (high sensitivity) would not experience any change as a result of the Proposed Development. Therefore, there is likely to be No Effect to this receptor.
Northumberland dome at the Observatory	The site is not considered to make any contribution to the sensitivity (medium) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. The magnitude of impact will be minor. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
The Observatory	The site is not considered to make any contribution to the sensitivity (medium) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. The magnitude of impact will be minor. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
Chapel, Churchill College	The site is not considered to make any contribution to the sensitivity (medium) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is due to the topography, intervening built form and landscape features. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
Research Flats	The site is not considered to make any contribution to the sensitivity (medium) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is due to the topography, intervening built form and landscape features. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
30 Storey's Way	The site is not considered to make any contribution to the sensitivity (medium) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the separation distance and intervening mature planting, which in the most part screens the site from the receptor. The magnitude of impact will be minor. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
29 Storey's Way	The site is not considered to make any contribution to the sensitivity (medium) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the separation distance and intervening mature planting, which in the most part screens the site from the receptor. The magnitude of impact will be minor. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
48 Storey's Way	The site is not considered to make any contribution to the sensitivity (medium) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the separation distance and intervening mature planting, which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
54 Storey's Way	The site is not considered to make any contribution to the sensitivity of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the separation distance and intervening mature planting, which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
56 Storey's Way	The site is not considered to make any contribution to the sensitivity of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the separation distance and intervening mature planting, which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
Garden of 48 Storey's Way RPG	The site is not considered to make any contribution to the sensitivity (high) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the separation distance and intervening mature planting, which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
Storey's Way Conservation Area	The site forms part of the townscape setting of the Conservation Area; however, it makes only a limited contribution to its heritage sensitivity (medium). Given the proximity of the site to the receptor, there is potential for the Proposed Development to impact the receptor through the introduction of built form within its immediate setting. However, in the most part the development would be screened by the existing mature planting that surrounds the Conservation Area, helping to limit any adverse impact. The magnitude of impact will be minor. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
Conduit Head Road Conservation Area	The site forms part of the townscape setting of the receptor and makes only a minor contribution to its heritage sensitivity (medium). Given the proximity of the site to the receptor and the maximum parameters proposed in this part of the site, there is potential for the Proposed Development to result in an adverse impact to the receptor through the introduction of built form of greater scale and density within its immediate setting. The magnitude of impact will be moderate. Therefore, there is likely to be an indirect, permanent effect which is considered to be Moderate Adverse (Significant).
Willow House	The site is not considered to make any contribution to the sensitivity (medium) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the intervening boundary planting which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
Salix	The site is not considered to make any contribution to the sensitivity (medium) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the intervening boundary planting which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
White House	The site is not considered to make any contribution to the sensitivity (medium) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the intervening boundary planting which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
American Cemetery RPG	The Proposed Development would not result in any change that would impact the sensitivity (high) of the receptor as a result of the extent of separation, including the M11 and the intervening landscape features which mean the site is not appreciable from within the cemetery. Therefore, there is likely to No Effect to this receptor.
Histon Road Cemetery RPG	Given the separation distance from the site, combined with the existing landscape features and built form, the receptor (high sensitivity) would not experience any change as a result of the Proposed Development. Therefore, there is likely to be No Effect to this receptor.
West Cambridge Conservation Area	The site forms part of the townscape setting of the receptor but is not considered to make any meaningful contribution to its heritage sensitivity (medium). It is therefore considered that the introduction of development of a similar nature and scale would be appropriate within the setting of this receptor and combined with the existing mature boundary planting, the Proposed Development would not result in any detrimental impact to the sensitivity of this receptor through a change to its townscape setting. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
Howes Place Conservation Area	The site forms part of the townscape setting of the receptor but is not considered to make any meaningful contribution to its heritage sensitivity (medium), being both visually and physically separated by Huntingdon Road. As a result of this and the intervening built form, landscape features, and topography of the site it is not considered that that development would result in any meaningful impact to the sensitivity of the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).

Name	Operational Effects
Non-Designated Built Heritage Receptors	
52 Storey's Way	The site is not considered to make any contribution to the sensitivity (low) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the separation distance and intervening mature planting, which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Negligible (Not Significant).
25 Storey's Way	The site is not considered to make any contribution to the sensitivity (low) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the separation distance and intervening mature planting, which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Negligible (Not Significant).
44 Storey's Way	The site forms part of the setting of the receptor but does not make any meaningful contribution to its heritage sensitivity (low). The Proposed Development will result in the introduction of built form within close proximity to the receptor; further urbanising its townscape setting. The magnitude of impact will be minor. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
34 Storey's Way	The site is not considered to make any contribution to the sensitivity (low) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the separation distance and intervening mature planting, which in the most part screens the site from the receptor. The magnitude of impact will be minor. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
Mortuary Chapel of All Souls, All Souls Lane	The site forms part of the setting of the chapel, with the undeveloped land contributing to a sense of peacefulness and tranquillity. The Proposed Development will result in the introduction of built form within close proximity to the receptor (low sensitivity); further urbanising its townscape setting. The magnitude of impact will be minor. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
141 Huntingdon Road ('Wayside', Storey's Way)	The site is not considered to make any contribution to the sensitivity (low) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the intervening boundary planting which in the most part screens the site from the receptor. The magnitude of impact will be minor. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
143-145 Huntingdon Road	The site is not considered to make any contribution to the sensitivity (low) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the intervening boundary planting which in the most part screens the site from the receptor. Therefore, there is likely to be an indirect, permanent effect which is considered to be Minor Adverse (Not Significant).
136 Huntingdon Road	The site is not considered to make any contribution to the sensitivity (low) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is due to the topography, intervening built form and landscape features. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Negligible (Not Significant).
138 Huntingdon Road	The site is not considered to make any contribution to the sensitivity (low) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is due to the topography, intervening built form and landscape features. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Negligible (Not Significant).
162 Huntingdon Road	The site is not considered to make any contribution to the sensitivity (low) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is due to the separation distance; the site is to the south of existing built form opposite the receptor combined with the intervening mature planting which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Negligible (Not Significant).
171 Huntingdon Road	The site is not considered to make any contribution to the sensitivity (low) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the intervening boundary planting which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Negligible (Not Significant).
173 Huntingdon Road	The site is not considered to make any contribution to the sensitivity (low) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the intervening boundary planting which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Negligible (Not Significant).
183 Huntingdon Road	The site is not considered to make any contribution to the sensitivity (low) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the intervening boundary planting which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Negligible (Not Significant).
National Institute of Agricultural Botany (NIAB), Huntingdon Road	Given the separation distance from the site, combined with the existing landscape features and built form, the Proposed Development will not result in any meaningful change to the setting of the receptor (low sensitivity), such that there would be no impact on its heritage sensitivity. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Negligible (Not Significant).
Nos. 1-14 Howes Place	Given the separation distance from the site, combined with the existing landscape features and built form, the Proposed Development will not result in any meaningful change to the setting of the receptor (low sensitivity), such that there would be no impact on its heritage sensitivity. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Negligible (Not Significant).
Conduit Rise	The site is not considered to make any contribution to the sensitivity of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity (low). This is primarily due to the intervening boundary planting which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Negligible (Not Significant).
Clements End	The site is not considered to make any contribution to the sensitivity (low) of the receptor and whilst the Proposed Development would result in a change to the wider townscape setting of the receptor, it would not impact its heritage sensitivity. This is primarily due to the intervening boundary planting which in the most part screens the site from the receptor. The magnitude of impact will be negligible. Therefore, there is likely to be an indirect, permanent effect which is considered to be Negligible (Not Significant).

10.59 The assessment identifies that none of the built heritage receptors, with the exception of the Conduit Head Road Conservation Area, would experience a significant effect during the operational phase.

10.60 Whilst the majority of the site is located at some distance from this receptor, the Conduit Head Road Conservation Area is located immediately to the adjacent to the eastern extent of the site. This area is identified on the Land Use Parameter Plan (PP4-10004) as 'Academic Floor Space (Use Class F1), student accommodation (Sui Generis), Co-living (Sui Generis).

10.61 Impacts will arise through the presence of new build development associated access, infrastructure, and landscaping which will bring about a visual change in character to the landscape setting of the Conservation Area. Any resultant effects on the sensitivity of the receptors will be permanent.

10.62 As noted previously, the site makes minor contribution to the sensitivity of the Conservation Area, forming part of its wider townscape setting. The operational phase of the Proposed Development will see the intensification of built form within the setting of the Conservation Area. The mitigation measures included within the submitted parameter plans have been developed alongside the accompanying Design Code, which sets out a series of principles relating to the detailed design for the site.

10.63 The majority of the site is located to the northeast, beyond the existing Phase 1 development and the scale of the Proposed Development within this area is between three and eight storeys. As a result of the intervening built form, separation distance, and topography the Proposed Development will not result in any impact to the sensitivity of the receptor. Two areas of development are located within proximity to the Conduit Head Road Conservation Area and have potential to impact the sensitivity of this receptor via a change to its townscape setting.

10.64 Immediately adjacent to the Conservation Area, the Proposed Maximum Heights Parameter Plan (PP6-10006) shows the maximum building heights of between four and five storeys. Those elements of height within this parcel are located centrally within the three blocks.

10.65 The submitted Design Code set out a series of principles to ensure the Proposed Development responds to its immediate surroundings and delivers a high-quality design through the development of the future RMAs.

10.66 The mitigation measures embedded in the Green Infrastructure, Play and Open Space Parameter Plan (PP2-10002) shows an area of existing landscape to be retained to the north and north-west corner of the

Conservation Area. The Illustrative Masterplan shows that built form can be pulled back from the boundary in order to reduce any perception of massing within the setting of the Conservation Area.

10.67 When considering the worst case scenario within the parameters, it is considered that receptor at Conduit Head Road Conservation Area would experience a moderate magnitude of impact through the change in character and intensification of development within its setting. The design mitigation allowed for within the parameters can be developed through further impact assessment testing at the RMA stage, with the measures secured through the use of appropriately worded planning conditions. This moderate magnitude of impact to a receptor of medium sensitivity would result in a permanent Moderate Adverse effect (**significant**)

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Enabling, Demolition and Construction Mitigation

10.68 As set out in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**, a Construction Environmental Management Plan (CEMP) will be secured by an appropriately worded planning condition or obligation. This will set out appropriate mitigation measures for noise, dust, vibration, and damage impacts during the enabling, demolition, and construction phase.

10.69 It is considered that the following measures included within the CEMP will assist in reducing any temporary effects on the identified heritage receptors:

- The requirement for Heavy Goods Vehicle (HGV) movements to be dispersed across the working day;
- Location of site compounds and material stockpiles in discrete and less visually prominent areas of the site;
- Control of security lighting to minimise upward and outward light pollution;
- Limiting the movement of materials;
- Minimising the duration of construction activity that requires tall plant and machinery;
- Ensuring that vehicular movements are restricted to designated routes; and
- Appropriate working hours to ensure adverse visual, noise and dust effects experienced by nearby receptors are minimised.

Operational Phase

10.70 As the Proposed Development is in outline, future RMAs will adhere to the core design principles as currently set out in the Design Code. The key principles relevant to the built heritage receptors are set out at paragraphs 10.50-10.51.

10.71 It is anticipated that additional mitigation will be achieved through the detailed design, layout, materials, and landscaping as the future RMAs come forward for each phase of the Proposed Development. As such through the architectural treatment, materiality, detailed layout, and landscape design, it is anticipated that any operational impacts would be further reduced.

RESIDUAL EFFECTS

10.72 This section presents an assessment of the residual effects of the Proposed Development that will remain once the additional mitigation measures, as set out above, are applied.

Enabling, Demolition, and Construction

10.73 The enabling, demolition, and construction phase would result in a temporary adverse effect for the duration of the construction period (approximately ten years). The mitigation measures set out above will reduce the potential impact on the setting of the identified built heritage receptors. As these impacts are temporary in nature and can be managed through the implementation of the CEMP means that following mitigation, the residual effects would be considered to be minor adverse to negligible and not significant.

Operational Phase

10.74 The embedded mitigation measures incorporated within the design of the Proposed Development, have been informed by a robust understanding of the surrounding context in which the Proposed Development is located, including the nearby heritage receptors. As such, it is considered that in relation to the heritage receptors scoped into this assessment, there will be negligible to minor adverse effects. With the exception of Conduit Head Road Conservation Area which would experience a moderate adverse (significant) effect.

10.75 However, within the Design Code it is considered that there is sufficient guidance provided to inform the RMAs stage to give confidence that the impacts could be further reduced.

10.76 The Design Code notes in relation to the site wide principles that the Proposed Development layout and heights should create variation and give an articulated skyline, this will create visual interest and ensure that the built form does not appear as a homogenous block across the site. It is clear that *"Taller massing **should** cluster around The Common; to contribute to the legibility of the structure and hierarchies of the emerging proposal."* The Common is centrally located within the site and this approach, which elements of scale located generally at considerable distance from the identified receptors is considered appropriate to reducing any impacts. It also guides that massing *"…must step down towards the edges and have a scale that is commensurate with the massing of the existing neighbours."* This approach will ensure that the Proposed Development responds appropriately to the adjacent townscape character, including those areas which include identified heritage receptors. These principles are reflected in the submitted Proposed Maximum Heights Parameter Plan (PP6-10006) and is considered appropriate in order to reduce any impacts to the heritage receptors.

10.77 The Design Code also sets out principles for 'Places' within the Proposed Development. The 'Gravel Hill' area is the area considered to be the most sensitive in relation to built heritage considerations. The principles included within this section of the Design Code will secure the retention of existing trees within this part of the site which contribute to the setting of the Conduit Head Road Conservation Area. ST.13 also notes that planting must be incorporated into the streets, and this approach responds positively to the adjacent Conservation Area, where street trees and mature planting are an integral part of its heritage sensitivity. ST.57 guides that the tone and materiality of buildings should be varied and respond to the immediate context of this part of the site, taking cues from the adjacent Conservation Area and associated historic buildings.

10.78 The additional mitigation that can be achieved at this stage through the detailed architectural design, use of appropriate materials palettes across the site in its entirety, together with a detailed layout that responds sensitively to the identified built heritage receptors, will ultimately deliver a high-quality townscape that responds positively to its context and will preserve the sensitivity of the nearby built heritage receptors. It is considered that as a result of these further mitigation measures at RMA stage, the residual effect of the Proposed Development on the identified heritage receptors would be reduced further (no effect or minor adverse). In respect to the Conduit Head Road Conservation Area, it is concluded that the effect could be reduced to Minor Adverse, which is not significant.

Table 10.8 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Enabling, Demolition and Construction							
Girton College	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	B	I	T	Mt
The Lodge, Girton College	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Shawms	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
Spring House	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
Schlumberger Gould Research Centre and attached perimeter wall to the north	No perceivable change as result of separation distance and intervening landscape features / built form and infrastructure	No Effect	Not Significant	B	I	T	Mt
Northumberland dome at the Observatory	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Negligible	Not Significant	L	I	T	Mt
The Observatory	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Negligible	Not Significant	L	I	T	Mt
Chapel, Churchill College	No perceivable change as result of separation distance and intervening landscape features / built form and infrastructure	No Effect	Not Significant	L	I	T	Mt
Research Flats, Churchill College	No perceivable change as result of separation distance and intervening landscape features / built form and infrastructure	No Effect	Not Significant	L	I	T	Mt
30 Storey's Way	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
29 Storey's Way	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
48 Storey's Way	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
54 Storey's Way	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
56 Storey's Way	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
Garden of 48 Storey's Way	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
Storey's Way Conservation Area	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	B	I	T	Mt
Conduit Head Road Conservation Area	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	B	I	T	Mt
Willow House	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
Salix	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
White House	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
American Cemetery RPG	No perceivable change as result of separation distance and intervening landscape features / built form and infrastructure	No Effect	Not Significant	N	I	T	Mt
Histon Road Cemetery RPG	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Negligible	Not Significant	B	I	T	Mt
West Cambridge Conservation Area	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	B	I	T	Mt
Howes Place Conservation Area	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	B	I	T	Mt
52 Storey's Way	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Negligible	Not Significant	L	I	T	Mt
25 Storey's Way	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Negligible	Not Significant	L	I	T	Mt
44 Storey's Way	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Negligible	Not Significant	L	I	T	Mt
34 Storey's Way	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Negligible	Not Significant	L	I	T	Mt
Mortuary Chapel of All Souls, All Souls Lane	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
141 Huntingdon Road ('Wayside', Storey's Way)	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
143-145 Huntingdon Road	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
136 Huntingdon Road	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Negligible	Not Significant	L	I	T	Mt
138 Huntingdon Road	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Negligible	Not Significant	L	I	T	Mt
162 Huntingdon Road	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
171 Huntingdon Road	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
173 Huntingdon Road	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
183 Huntingdon Road	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Minor Adverse	Not Significant	L	I	T	Mt
National Institute of Agricultural Botany (NIAB), Huntingdon Road	No perceivable change as result of separation distance and intervening landscape features / built form and infrastructure	No Effect	Not Significant	L	I	T	Mt
Nos. 1-14 Howes Place	No perceivable change as result of separation distance and intervening landscape features / built form and infrastructure	No Effect	Not Significant	L	I	T	Mt

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Conduit Rise	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Negligible	Not Significant	L	I	T	Mt
Clements End	Construction machinery and activity visible; hoarding surrounding the site; construction noise.	Negligible	Not Significant	L	I	T	Mt
Completed Development							
Girton College	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	B	I	P	Lt
The Lodge, Girton College	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
Shawms	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	B	I	P	Lt
Spring House	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
Schlumberger Gould Research Centre and attached perimeter wall to the north	No perceivable change as result of separation distance and intervening landscape / built form.	No Effect	Not Significant	B	I	P	Lt
Northumberland dome at the Observatory	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
The Observatory	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
Chapel, Churchill College	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
Research Flats, Churchill College	No perceivable change as result of separation distance and intervening landscape / built form.	No Effect	Not Significant	L	I	P	Lt
30 Storey's Way	Introduction of increased height and density of built form within immediate surroundings.	Minor Adverse	Not Significant	L	I	P	Lt
	Impacts limited as a result of intervening landscape and topography						
29 Storey's Way	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
48 Storey's Way	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
54 Storey's Way	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
56 Storey's Way	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
Garden of 48 Storey's Way	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
Storey's Way Conservation Area	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	B	I	P	Lt
Conduit Head Road Conservation Area	Given the proximity of the site to the receptor and the maximum parameters proposed in this part of the site, there is potential for the Proposed Development to result in an adverse impact to the receptor through the introduction of built form of greater scale and density within its immediate setting. Additional mitigation can be achieved through the reserved matters applications in relation to the detailed architectural design, materials palettes, together with a detailed layout that responds sensitively to the identified built heritage receptors. This will further mitigate the residual effect of the Proposed Development such that it is concluded that the effect could be reduced to Minor Adverse, which is not significant.	Minor Adverse	Not Significant	B	I	P	Lt

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Willow House	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	B	I	P	Lt
Salix	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
White House	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
American Cemetery RPG	No perceivable change as result of separation distance and intervening landscape / built form.	No Effect	Not Significant	N	I	P	Lt
Histon Road Cemetery RPG	No perceivable change as result of separation distance and intervening landscape / built form.	No Effect	Not Significant	B	I	P	Lt
West Cambridge Conservation Area	Introduction of additional built form within setting. However, nature and type of development is in keeping with surrounding character. The Proposed Development would only impact a small part of a very large receptor, reducing any perceived impact.	Minor Adverse	Not Significant	B	I	P	Lt
Howes Place Conservation Area	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	B	I	P	Lt
52 Storey's Way	Introduction of increased height and density of built form within wider surroundings Impacts limited as a result of intervening landscape and topography	Negligible	Not Significant	L	I	P	Lt
25 Storey's Way	Introduction of increased height and density of built form within wider surroundings Impacts limited as a result of intervening landscape and topography	Negligible	Not Significant	L	I	P	Lt
44 Storey's Way	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
34 Storey's Way	Introduction of increased height and density of built form within immediate surroundings	Minor Adverse	Not Significant	L	I	P	Lt
	Impacts limited as a result of intervening landscape and topography						
Mortuary Chapel of All Souls, All Souls Lane	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
141 Huntingdon Road ('Wayside', Storey's Way)	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
143-145 Huntingdon Road	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
136 Huntingdon Road	Introduction of increased height and density of built form within wider surroundings Impacts limited as a result of intervening landscape and topography	Negligible	Not Significant	L	I	P	Lt
138 Huntingdon Road	Introduction of increased height and density of built form within wider surroundings. Impacts limited as a result of intervening landscape and topography	Negligible	Not Significant	L	I	P	Lt
162 Huntingdon Road	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
171 Huntingdon Road	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
173 Huntingdon Road	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
183 Huntingdon Road	Introduction of increased height and density of built form within immediate surroundings. Impacts limited as a result of intervening landscape and topography	Minor Adverse	Not Significant	L	I	P	Lt
National Institute of Agricultural Botany (NIAB), Huntingdon Road	No perceivable change as result of separation distance and intervening landscape / built form.	No Effect	Not Significant	L	I	P	Lt

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Nos. 1-14 Howes Place	No perceivable change as result of separation distance and intervening landscape / built form.	No Effect	Not Significant	L	I	P	Lt
Conduit Rise	Introduction of increased height and density of built form within wider surroundings Impacts limited as a result of intervening landscape and topography	Negligible	Not Significant	L	I	P	Lt
Clements End	Introduction of increased height and density of built form within wider surroundings Impacts limited as a result of intervening landscape and topography.	Negligible	Not Significant	L	I	P	Lt

Notes:
Residual Effect
Scale = Negligible / Minor / Moderate / Major
Nature = Beneficial or Adverse
Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

10.79 No future changes to the baseline conditions of the built heritage receptors themselves are anticipated. Phase 1 of the 2013 OPP has already been built out and several areas within the wider site have been cleared.

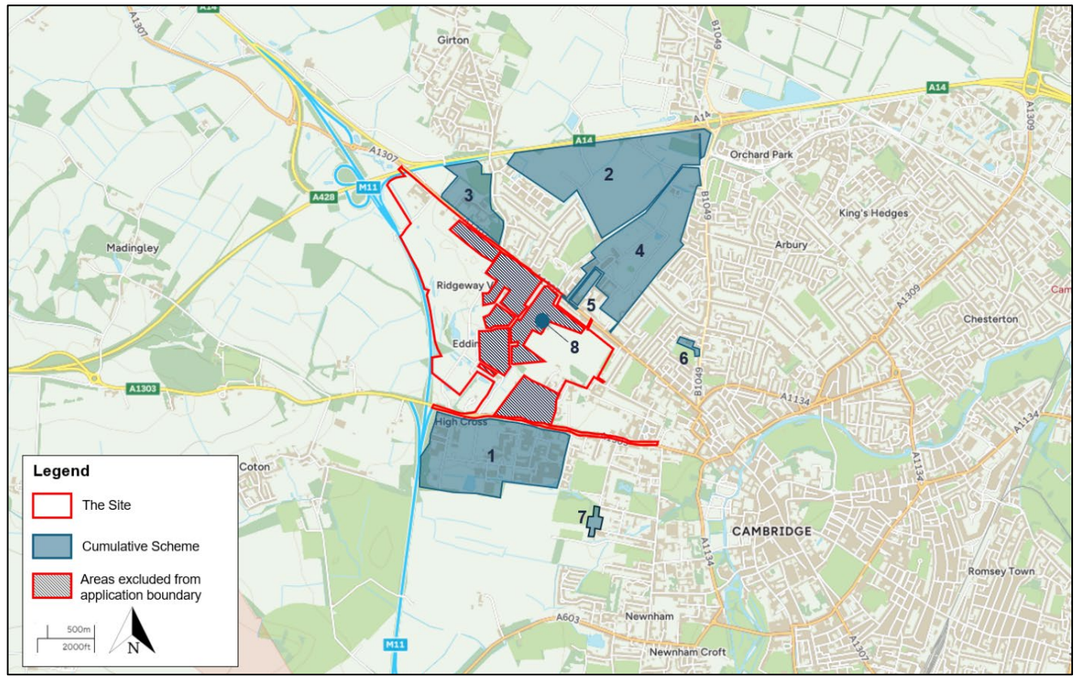
Cumulative Effects Assessment

10.80 The cumulative schemes that are considered within the ES are typically located within a 1km radius from the centre of the site, as based on experience and professional judgement, this spatial extent is considered appropriate for determining cumulative effects in this locality.

10.81 The cumulative schemes considered within the EIA, which have been agreed through the EIA Scoping process are included below and shown on Figure 10.2. Further details of the cumulative schemes are set out in **ES Volume 1, Chapter 2: EIA Methodology** of this ES.

- 1) West Cambridge Site.
- 2) Darwin Green Phases Two and Three.
- 3) Girton College.
- 4) Darwin Green Phase One.
- 5) National Institute of Agricultural Botany (NIAB).
- 6) 137 and 143 Histon Road.
- 7) Grange Farm Site; and
- 8) Gusto Mills.

Figure 10.2 Cumulative Schemes



Enabling, Demolition and Construction

10.82 It is anticipated that subject to standard mitigation measures, including a site-specific CEMP being adopted at the cumulative schemes, temporary significant adverse effects from 'impact interactions' can be prevented from occurring during the enabling, demolition and construction stages of Proposed Development. Accordingly, when the nature, scale and relative disposition of the majority of the identified cumulative schemes relative to the site are considered they would not change any of the identified effects on the relevant built heritage assets within the study area. Accordingly, there would be no significant or additional residual effects arising from cumulative schemes during the enabling, demolition and construction works.

Completed Development

10.83 Most of the identified cumulative schemes would not have the potential to change any of the identified residual effects on the heritage assets within the study area arising from the complete and operational Proposed Development, as a consequence of their nature, disposition relative to the site and interposing townscape.

10.84 However, the Cambridge West Site at Madingley Road is located to the south of the Conduit Head Road Conservation Area. The development is located to the south of the Conservation Area and upon completion, will result in additional new built form within the wider setting of this receptor. However, as set out in the significance assessment in the BHTA within **ES Volume 3, Appendix: Built Heritage – Annex 1**, the Conservation Area is relatively well screened from its surroundings, being enclosed by mature tree planting to its boundaries. The townscape setting of the Conservation Area has previously undergone extensive change through the expansion of the city and this has resulted in the setting of the receptor being defined by suburban development of scale.

10.85 The location of the Proposed Development to the south of Madingley Road, combined with the enclosed character of the Conservation Area and the previous intensification of urban development within the setting means that the cumulative effect will continue to be Minor Adverse (not significant), post mitigation.

10.86 The Girton College site to the north-west of the site would also add further built development within the setting of the designated heritage assets at Girton College and may be visible within some views. However, as a result of the existing landscape and boundary planting, the perceived cumulative impacts would be reduced, such that any residual effect would continue to be minor adverse (Not Significant).

10.87 Overall, the cumulative schemes, would, by their siting, nature and scale, not change the reported effects on the built heritage assets but would otherwise confirm the changing character of this part of Cambridge and the townscape settings of the heritage assets.

LIKELY SIGNIFICANT EFFECTS

10.88 Based on the comprehensive assessment presented in this ES chapter, it has been concluded that the Proposed Development is not expected to result in any significant adverse or beneficial effects on built heritage receptors during enabling, demolition and construction and once the Proposed Development is complete and operational.

Chapter 11: Ecology and Biodiversity

TRIUM

ECOLOGY AND BIODIVERSITY	
AUTHOR	Mike Dean, MD Ecology Limited
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Ecology and Biodiversity** Annex 1: Letter from Guy Belcher, Cambridge City Council Biodiversity Officer, dated 19 September 2024, relating to Habitat Regulations Assessment Screening; Annex 2: Summary of the Results of a Data Search Using MAGIC.GOV.UK; Annex 3: Results of a Data Search with CPERC; Annex 4: Washpit Brook River Condition Assessment Baseline Report (Version 2.0, dated 5 December 2024); Annex 5: GCN Survey Report; Annex 6: Habitat, Plant and Invertebrate Survey Report Annex 7: Terrestrial Invertebrate Survey Report Annex 8: Additional Amphibian Surveys Report Annex 9: Reptile Survey Report Annex 10: Breeding Bird Survey Report Annex 11: Winter Bird Survey Report Annex 12: Bat Roost Assessment Report Annex 13: Bat Activity Survey Report Annex 14: Water Vole and Otter Survey Report Annex 15: Badger Survey Report Annex 16: Harvest Mouse Survey Report
KEY CONSIDERATIONS	This assessment focuses on the ecological impacts associated with habitat loss and degradation predicted to occur as a result of the Proposed Development, as well as disturbance to wildlife that may arise from construction phase noise and lighting and impacts predicted to result from the completed Proposed Development, such as increased recreational pressure and permanent lighting. The assessment has been based on the approach recommended by CIEEM in its guidelines on Ecological Impact Assessment, and follows the definition of significant effects set out in those guidelines, as well as translating this to provide an assessment of significance that correlates with the other chapters of the EIA. The net change in biodiversity resulting from the project has been calculated following the statutory biodiversity metric. This is referred to in this ES chapter with details provided separately.
CONSULTATION	An EIA Scoping Report was prepared and submitted to Greater Cambridge Shared Planning Service (GCSPS) in November 2024 (**ES Volume 3, Appendix: EIA Methodology – Annex 1**). An EIA Scoping Opinion was subsequently received on 23 January 2025 and is included within **ES Volume 3, Appendix: EIA Methodology – Annex 2**. This generally agreed with the scope of this ES chapter, highlighting the need to undertake bat activity surveys for barbastelle bats in particular, and incorporate appropriate protection measures to allow for this species to continue to use the site following completion of the Proposed Development. An initial consultation meeting was held with Cambridge City Council's Biodiversity Officer on 8 July 2024 at which the proposed scope of ecological surveys was discussed, particularly the bat activity surveys. Following this meeting the project team wrote to the council in relation to Eversden and Wimpole Woods Special Area of Conservation (SAC), which is designated for barbastelle bats. The Biodiversity Officer responded in writing in March 2025 to confirm that there were no likely significant effects of the Proposed Development on the SAC and a Habitat Regulations Assessment was not required. As a result, consideration of impacts on the SAC has been scoped out of the EIA, although impacts on barbastelle bats more generally have been assessed. The HRA Screening letter and GCSP response are provided in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 1**. A further meeting was held on 5 February 2025. Draft reports from the following ecological surveys completed at this stage were provided to the council ahead of the meeting: • Water vole and otter survey • Great crested newt survey • Preliminary bat roost assessment • Badger survey • Breeding bird survey • Harvest mouse survey • Habitat, plant and invertebrate survey • Bat activity survey – interim report. An initial draft Biodiversity Net Gain assessment was also discussed at the same meeting.

ASSESSMENT METHODOLOGY

Basis of Assessment

11.1 The scope of the ecological surveys and desk study undertaken has been determined in consultation with Cambridge City Council's Biodiversity Officer. It is based on knowledge of the results of previous surveys undertaken to inform the 2013 OPP and ongoing monitoring of the site, as well as an understanding of the Proposed Development and likely zone of influence of the project for the various ecological features potentially affected.

11.2 The site is located within a relatively discrete area of land that has limited connectivity to other areas of ecological value, bounded by the M11 Motorway to the west and north-west, the A14 to the north, Huntingdon Road and associated properties to the north-east, Storey's Way and associated properties to the east, and Madingley Road and associated properties, including the Madingley Road Park and Ride, to the south. Parts of Phase 1 of the 2013 OPP have also been excluded from the site boundary, generally located within the centre of the area described above.

11.3 It is therefore likely that the zone of influence of the Proposed Development for most potential ecological receptors will be confined to the site and the land immediately beyond it, up to the outer road network (M11, A14, Huntingdon Road, Storey's Way and Madingley Road).

11.4 Designated nature conservation sites could be affected over greater distances, particularly where they are designated for mobile species, such as bats. Similarly, mobile species such as otters, bats and badgers could be affected over greater distances. The zone of influence for such potential receptors is variable and is described separately for each within the subsequent sections.

11.5 The assessment of impacts has been based on the design and layout of the Proposed Development as described in **ES Volume 1, Chapter 4: The Proposed Development** and as shown on the Parameter Plans.

11.6 This assessment has also been informed by the Illustrative Masterplan for areas of soft landscaping (Drawing Reference: NEP718-GRA-SK-052 Rev 06), the lighting design for the Proposed Development, as described in the Lighting Design Concept Proposal (Drawing Reference NWC-MP2024-BDP-XX-RP-00001, Rev P07) and the drainage design as described in the Flood Risk Assessment and Surface Water Drainage Strategy (NWC-MP2024-ACM-SW-RP-00019). Key aspects of the landscape and lighting designs that are fundamental to the assessment of ecological impacts, and which could be modified as part of a subsequent Reserved Matters Application, have been highlighted and described as mitigation measures to ensure that they are secured.

Defining the Baseline

11.7 The baseline for the assessment is the existing condition of designated sites, habitats and species populations on the site and within the surrounding area. This has been informed by up-to-date (2024/2025) ecological field surveys and a desk study, as well as a review of historical survey information collected over the past 20 years to inform the 2012 ES and during ecological monitoring undertaken at the site since 2012. Consideration has been given to identified trends in relation to the distribution and abundance of different species, based on the available historical data.

11.8 The desk study comprised the following, undertaken during March and April 2024:

- A search for statutory designated nature conservation sites within a 10km radius of the site using magic.gov.uk;
- A search for European Protected Species (EPS) licence applications within the site or within 4km of the site boundaries for bats and within 1km for other species using magic.gov.uk;
- A search for non-statutory designated nature conservation sites within a 2km radius of the site with the Cambridgeshire and Peterborough Environmental Records Centre (CPERC);

- A search for records of protected or priority species within a 2km radius of the site with CPERC, including Species of Principal Importance for the Conservation of Biodiversity in England (SPIs), Red List species, Nationally Notable, Scarce and Rare species, Cambridgeshire and Peterborough Additional Species of Interest, and veteran trees; and
- A search for records of bats within a 10km radius of the site with CPERC.

11.9 The 2024/25 ecological field surveys focused on the site and adjacent areas of soft landscaping constructed as part of Phase 1 of the 2013 OPP, and comprised the following:

- Detailed habitat mapping using both Phase 1 Habitat Survey categories and UKHAB categories, along with condition assessments suitable to inform a Biodiversity Net Gain (BNG) assessment (June 2024);
- An assessment of the status and condition of the hedgerows to inform a BNG assessment as well as an assessment according to the Wildlife and Landscape criteria of the Hedgerows Regulations 1997 (June 2024);
- A search for notable and Invasive Non-native Species (INNS) of plants (June 2024);
- A River Condition Assessment (RCA) of the Washpit Brook to inform a BNG assessment (October 2024);
- A walkover survey to assess the value of the site for invertebrates and identify any notable species encountered (June 2024), followed by a targeted invertebrate sampling survey within the eastern part of the site (June 2025);
- A great crested newt (GCN) survey of all ponds within the site and in adjacent areas within 500m, by taking water samples and testing for GCN eDNA (May and June 2024), and subsequent population size class assessments for GCN in the ponds where this species has been recorded (March to June 2025);
- Toad surveys of the lagoon at Brook Leys and large ponds within 500m of the site (March and April 2025);
- Reptile surveys within areas identified as providing potentially valuable habitat (April to June 2025);
- A breeding bird survey (March to July 2024);
- A wintering and migratory bird survey (September 2024 to March 2025);
- An assessment of the suitability of buildings for use by roosting bats (Preliminary Roost Assessment) and an internal inspection (June and August 2024), with follow up dusk emergence surveys where required (May and June 2025);
- An assessment of the suitability of trees for use by roosting bats (February 2025) with ladder-top inspections (April, July and August 2025), climbing inspections (June, July and August 2025) or dusk emergence surveys (July and August 2025) were required for trees likely to be felled or potentially affected by lighting. No bat roosts were identified within any of the trees surveyed (although roosts may be present on trees within woodland areas that were not surveyed as they are not likely to be affected);
- Detailed bat activity surveys comprising a combination of manual transect surveys at dusk (with the site split into two separate transect routes) and automated detectors set to record between dusk and dawn on five consecutive nights per month, between April and October inclusive, at separate locations to sample the various habitat types present (at least 3 in the eastern part of the site and at least 3 in the western part of the site); the bat activity surveys commenced in August 2024 and were completed in July 2025;
- Additional bat activity survey was undertaken around Storey's Way Wood in the eastern part of the site during May and June 2025, using two automated detectors;
- Mapping and classification of badger setts (April 2024);
- A targeted search for harvest mouse nests in the most valuable habitats present for this species (November and December 2024);
- A targeted water vole survey of all wetland habitat (May and September 2024); and
- A targeted search for otter holts (May and November 2024).

11.10 All surveys followed good practice guidelines where such guidelines are available.

11.11 Full details of the survey methods used are provided in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 4 to 16** inclusive.

Evolution of the Baseline

11.12 The evolved baseline is a baseline condition at an indeterminate point in the future, for a scenario which assumes all of the cumulative schemes are built in the surrounding environment and that the surrounding environment, including the site, has naturally evolved (e.g. trees/scrub have grown larger), in the absence of the Proposed Development being implemented.

11.13 The only ongoing impacts of the Proposed Development that need to be considered against the evolved baseline are those of increased recreational pressure and increased lighting, and these therefore only relate to ecological features potentially affected by such impacts.

11.14 The consideration of the evolved baseline is based on a qualitative approach, based on professional opinion, and experience from the effects of construction and occupation of Phase 1 of the 2013 OPP.

Impact Assessment Methodology

Enabling, Demolition and Construction

11.15 The impacts of enabling, demolition and construction works have been determined based on the information set out in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**.

11.16 It has been assumed that standard control measures will be implemented, such as dampening down for dust control, minimising construction site lighting, and pollution prevention measures, as set out in the outline Construction Environmental Management Plan (CEMP) (Document Reference NWC-MP2024-TTD-SW-RP-00301-P01). The details of the CEMP will be agreed with Greater Cambridge Shared Planning, secured through a planning condition.

Phasing

11.17 The Proposed Development will be constructed in phases, as described in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**. The majority of the ecological impacts that are likely to arise are location specific and will not occur site wide, given that Phase 1 has been constructed under the 2013 OPP and effectively separates Phases 2 and 3 (in the western half of the site) from Phase 4 in the eastern half.

11.18 The ecological impacts associated with Phases 2 and 3 will primarily occur during the earthworks across this part of the site, and it is therefore assumed that most impacts will occur at the start of Phase 2A. The exceptions to this are the impacts affecting the land within Plot A, which it is assumed will not occur until Phase 3; these have been identified specifically in the assessment that follows, where relevant.

11.19 Ecological impacts affecting ecological features in the eastern part of the site will occur during Phase 4.

11.20 Bats are likely to encounter all parts of the site and therefore the phasing warrants further consideration for these receptors.

Completed Development

11.21 The impacts associated with the Proposed Development, when complete and operational, have been determined on the basis that all phases, as described in **ES Volume 1, Chapter 4: The Proposed Development** are completed and that the Proposed Development is fully occupied. This represents a reasonable worst-case scenario as it would entail maximum recreational pressure and maximum extent of permanent lighting which are the two impacts most likely to give rise to a significant effect on ecological receptors.

11.22 The layout of footpaths and cyclepaths, and the lighting design, are both illustrative at this stage. These elements of the Illustrative Masterplan have been used to inform the assessment.

Assumptions and Limitations

11.23 Any assumptions relating to the assessment of impacts are set out in the relevant sections below.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

11.24 In accordance with the CIEEM guidelines on EcIA (CIEEM 2018[1]), the ecological receptors comprise designated nature conservation sites, habitats and species considered a national or local priority for nature conservation, and protected species that might be affected by the Proposed Development or where a breach of wildlife legislation could potentially occur. Invasive Non-native Species (INNS) also comprise receptors where a breach of the legislation may occur.

11.25 Designated nature conservation sites include Special Areas of Conservation, Special Protection Areas (SPAs), Ramsar Sites, Sites of Special Scientific Interest (SSSIs), Local Nature Reserves and locally designated non-statutory sites – in this case, Cambridge City Wildlife Sites (CiWSs) or Cambridgeshire County Wildlife Sites (CWSs).

11.26 Habitats and species considered a national or local priority for nature conservation are those listed as Habitats or Species of Principal Importance for the Conservation of Biodiversity in England[2], or Cambridgeshire and Peterborough Additional Species of Interest[3].

11.27 Protected species are those listed as receiving protection under Schedules 2 or 5 of the Conservation of Habitats and Species Regulations 2017 (as amended), Schedules 1, 5 or 8 of the Wildlife and Countryside Act 1981 (as amended), and badgers (protected under the Protection of Badgers Act 1992).

11.28 INNS are species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

11.29 Following the CIEEM guidelines on EcIA, the geographic scale of importance of each receptor has been assessed based on available contextual information. The following scale of importance are generally used, adapted for the specific location of the Proposed Development:

- International, for example a SAC, SPA or Ramsar site;
- National, for example a SSSI;
- County, for example an area of a priority habitat type, or a population of a priority species, that represents a substantial proportion of that present within Cambridgeshire, or a CWS or CiWS, or a habitat or species population that would meet the criteria for designation of such a site;
- Local, for example a population of a priority species that does not represent a substantial proportion of that present within Cambridgeshire, or would not meet the criteria for designation of a CWS or CiWS (Cambridgeshire and Peterborough County Wildlife Sites Panel 2020[4]).

11.30 It is difficult to assess the importance of ecological receptors below the County scale, due to a lack of contextual information at smaller geographical scales. Local importance has therefore been used for any ecological receptors that are relevant to the decision-making process (because they are legally protected or listed as priorities for conservation, for example) that do not meet the criteria adopted for determining County importance.

Magnitude of Impact

11.31 In accordance with the CIEEM guidelines on EcIA, impacts are described in relation to a range of relevant characteristics of which magnitude is one. In this case, the magnitude of an impact is expressed as an absolute number wherever possible (e.g. the area in m^2 of a habitat that is to be lost) rather than as a magnitude category (e.g. high, medium and low).

11.32 Other impact characteristics are described for each impact where relevant. This includes:

- Duration – how long the impact is predicted to last for;
- Positive/negative – impacts are described as positive (beneficial) or negative (adverse);
- Complexity – the impact pathway is identified and impacts are assessed, whether they are direct or indirect;
- Geographic Extent – the area over which an impact will affect the receptor, where this is different to the magnitude;
- Reversibility – the potential for the impact to be reversed through mitigation or spontaneous recovery is assessed, where relevant;
- Timing – in some cases the timing of the activity is specifically relevant to the likelihood of an impact occurring; and
- Frequency – in some cases the frequency of the activity is specifically relevant to the likelihood of an impact occurring, or determining whether the impact gives rise to a significant effect or not.

Defining the Effect

11.33 In accordance with the CIEEM guidelines on EcIA, effects on ecological receptors are assessed as either 'likely to be significant' or 'not likely to be significant' based on an understanding of the likely impacts and relevant impact characteristics, the vulnerability of each receptor to those impacts, and the various definitions of 'significant effect' as identified by the guidelines:

- An effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' (referred to as ecological receptors in this chapter) or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from International to Local.
- An effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project.
- In broad terms, an effect that encompasses impacts on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution).

11.34 For the purposes of this assessment, a likely significant ecological effect is one that affects the structure and function of a designated nature conservation site, or the conservation status of a habitat or species population, specifically where the effect supports or undermines national or local nature conservation policy or specific conservation objectives.

11.35 Where effects are identified that meet CIEEM's definition of significance, these will be described:

- As either adverse (negative) or beneficial (positive); and

1 CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester.
2 https://www.gov.uk/government/publications/habitats-and-species-of-principal-importance-in-england
3 https://www.cperc.org.uk/information.php
4 Cambridgeshire and Peterborough County Wildlife Sites Panel (2020). Cambridgeshire and Peterborough County Wildlife Sites Selection Guidelines. Version 7.1.

- In terms of the geographical scale of significance, primarily based on the scale of importance of each receptor.

Categorising Likely Significant Effects

11.36 In order to ensure consistency between the outcomes of the assessment of effects on ecological receptors and other environmental receptors as set out in other chapters, the outcomes of the assessment from the approach described above will be translated to one of the seven possible outcomes from the assessment approach set out in **ES Volume 1, Chapter 2: EIA Methodology**. This will be done using a simple translation table, adapted from Box, *et al.* (2017)[5], which is referred to as a possible approach in CIEEM's EcIA Guidelines.

11.37 Following this approach, effects at the Local scale are considered to be equivalent to Minor (beneficial or adverse) effects. Such effects are considered to be significant in terms of ecological receptors. However, it should be noted that this category covers a broad spectrum of assessment outcomes given the approach taken to determining Local importance, as described in paragraph 11.30. This should be considered when comparing Minor significant ecological effects (either adverse or beneficial) with Minor adverse significant effects (adverse or beneficial) identified in other chapters of the ES.

Table 11.1 Translating categories of significance

Outcome of the Assessment for Ecological Receptors Following the Approach Described	Equivalent Category of Significance Based on Those Set Out In ES Volume 1, Chapter 2: EIA Methodology
Adverse Effect at the International Scale	Major Adverse (Significant) Effect
Adverse Effect at the National Scale	Major Adverse (Significant) Effect
Adverse Effect at the County Scale	Moderate Adverse (Significant) Effect
Adverse Effect at the Local Scale	Minor Adverse (Significant) Effect
No Significant Effect	Negligible (Not Significant) Effect
Beneficial Effect at the Local Scale	Minor Beneficial (Significant) Effect
Beneficial Effect at the County Scale	Moderate Beneficial (Significant) Effect
Beneficial Effect at the National Scale	Major Beneficial (Significant) Effect
Beneficial Effect at the International Scale	Major Beneficial (Significant) Effect

BASELINE CONDITIONS

Designated Nature Conservation Sites

Ascension Parish Burial Ground City Wildlife Site

11.38 The Ascension Parish Burial City Wildlife Site (CiWS) is located off-site and immediately adjacent to the eastern boundary of the site (see map provided in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 3**). It is designated for supporting 'two or more strong neutral grassland indicator species in frequent numbers.'

11.39 Given its status as a CiWS it is considered to be of County importance for nature conservation.

Bird Sanctuary, Conduit Head City Wildlife Site

11.40 This CiWS comprises a series of inter-linked ponds surrounded by woodland and is located off-site and approximately 100m from the site boundary (see map provided in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 3**). It is separated from the site by properties and gardens associated with Lansdowne Road and Conduit Head Road. It is designated for supporting '*S6 Greater Pond Sedge swamp, S7 Lesser Pond Sedge swamp and 0.5-1ha woodland with 5 or more woodland plants and 10% or more mature woodland. Also supports great crested newts.*'

11.41 The outflow from the ponds flows across the site, forming a tributary of the Washpit Brook.

11.42 Given its status as a CiWS it is considered to be of County importance for nature conservation.

Scrub East of M11 Verge City Wildlife Site

11.43 This CiWS comprises an area of scrub over 0.5ha in area with four or more woody species, as well as a hedgerow that is more than 100m long and 2m wide at its widest point with four or more woody species. It is located off-site and approximately 200m from the southern boundary, and south of Madingley Road (see map provided in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 3**).

11.44 Given its status as a CiWS it is considered to be of County importance for nature conservation.

Other Designated Nature Conservation Sites

11.45 There is one European Site within 10km: Eversden and Wimpole Woods Special Area of Conservation (SAC), designated for its summer maternity roost of barbastelle bats. The SAC is located off-site, more than 9.5km to the south-west of the site and on the opposite side of the M11 Motorway; no 'functionally linked habitat' is present on site. Impacts on the SAC have been screened out in consultation with Cambridge City Council's Biodiversity Officer (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 1**). The SAC is therefore not considered further in this assessment.

11.46 There is one Site of Special Scientific Interest (SSSI) within the site: Traveller's Rest Pit SSSI, which is designated for its geological interest. Histon Road SSSI is located off-site, 1.5km to the east/north-east of the site and is also designated for its geological interest. Both of these SSSIs are therefore outside the scope of the ecology and biodiversity assessment and are not considered further.

11.47 Madingley Wood SSSI is located off-site, 1.8km to the west and on the opposite side of the M11 Motorway (see map provided in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 3**). It is designated for its ash-field maple woodland habitat. The Proposed Development is located within the Impact Risk Zone (IRZ) for this SSSI, but is not a development type which is listed as requiring consultation with Natural England. The SSSI is therefore not considered as a receptor within this assessment, although it does support roosting barbastelle bats which is considered (see below).

11.48 The Proposed Development is not located within the IRZ of any other SSSIs and therefore no other SSSIs are considered in this assessment.

11.49 There are 15 Local Nature Reserves within 10km of the site. These are all located outside of the site boundaries and within central or eastern Cambridge and are not considered likely to be affected by the Proposed Development.

11.50 There are several non-statutory designated nature conservation sites within 2km of the Proposed Development. None are located within the site, although as described in paragraphs 11.38 to 11.44, three CiWSs are located adjacent to, or within very close proximity to the boundary. None of the other non-statutory designated nature conservation sites are located sufficiently close to be affected by the Proposed Development and therefore none are considered further.

11.51 This follows the approach set out in the EIA Scoping Report (**ES Volume 3, Appendix: EIA Methodology – Annex 1**), and has been agreed with Cambridge City Council's Biodiversity Officer.

11.52 The results of the search for statutory designated sites within 10km of the site using magic.gov.uk are summarised in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 2**. The results of the search for

5 Box, J., Dean, M. and Oakley, M. (2017) An Alternative Approach to the Reporting of Categories of Significant Residual Effects in Environmental Impact Assessment. In Practice, 97, p47-50.

non-statutory sites within 2km through CPERC are provided in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 3**.

Habitats

Veteran Oak Tree

11.53 The veteran oak tree at Eddington is located immediately outside of the current site, within Phase 1 of the 2013 OPP (see Figure 11.1). It is listed in the Arboricultural Survey submitted with the planning application for the Proposed Development as Tree T001, and is a Category A tree and covered by a Tree Preservation Order (see Arboricutural Impact Assessment (Document Reference NWC-MP2024-TFL-SW-RP-01-AIA) and accompanying tree schedule). Invertebrate surveys in 2011 undertaken to inform the 2012 ES identified the presence of a valuable invertebrate fauna associated with the tree. It is an irreplaceable habitat and is considered to be of, at least, County importance for nature conservation.

Washpit Brook

11.54 The Washpit Brook flows through the southern and western parts of the site, from the off-site ponds at the Bird Sanctuary, Conduit Head City Wildlife Site, flowing west along the northern edge of the Madingley Road Park and Ride, then along the edge of Pheasant Plantation, before turning north at the foot of the M11 Motorway embankment and flowing through the site towards the A14 (see Figure 11.1). It is joined by another watercourse alongside the M11, which flows through a culvert under the motorway embankment. It also links with a drainage ditch located on the west side of the Madingley Road Park and Ride which appears to drain the land to the south of the site at Madingley Road.

11.55 The Washpit Brook is generally 1-2m wide, has steep earth banks (steeper than 1:1) and a silty bed. The character of the brook varies along its length within the site but it is generally tree-lined on one bank resulting in it being heavily shaded and supporting little aquatic or emergent vegetation.

11.56 A flow control structure was constructed in the brook as part of Phase 1 of the 2013 OPP, which is designed to protect downstream areas from flooding, by holding water on site during flood conditions. The water is pushed into a lowered area of land on the western side of the brook and a 'low flow channel' on the eastern side, which links to a swale receiving the outflow from the lagoon at Brook Leys.

11.57 A River Condition Assessment (RCA) of the brook identified six separate sub-reaches, only one of which was assessed as being in 'moderate' condition: the length alongside Pheasant Plantation. The remaining sub-reaches were assessed as being in 'poor' or 'fairly poor' condition. Further details are provided in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 4**.

11.58 Invertebrate surveys undertaken in 2011 to inform the 2012 ES confirmed the presence of an invertebrate fauna of low conservation value. This is unlikely to have changed significantly in the intervening period given that the channel is largely unchanged and that the brook still receives water from agricultural land to the west of the M11 Motorway and from an attenuation pond that takes runoff from the M11, to the west of Pheasant Plantation.

11.59 Rivers and streams that are near-natural or meet certain criteria are a habitat-type of principal importance for the conservation of biodiversity. The Washpit Brook has been heavily modified and is therefore not considered to qualify as a habitat of principal importance, although it functions as a valuable wildlife corridor in the context of the site and local area. Given the relatively poor quality of the brook within the site it is considered to be of Local importance for nature conservation.

Lagoon at Brook Leys and other Phase 1 Wetland Habitats

11.60 The lagoon at Brook Leys was constructed as part of Phase 1 of the 2013 OPP during 2015 and 2016 (see Figure 11.1). It supports an area of relatively shallow open water fringed by marginal vegetation dominated by common reed. It receives inflows from swales that drain Eddington; the water passes through reedbeds before entering the lagoon. Water levels in the lagoon are stable. It provides a valuable habitat for a range of species, as discussed in subsequent sections. Ponds and reedbeds are both listed as habitat-types of principal importance for the conservation of biodiversity. Although the lagoon was only constructed 10 years ago it provides a valuable wetland habitat for local biodiversity.

11.61 The lagoon is surrounded by areas of sown wildflower grassland and tree planting, also created as part of Phase 1 of the 2013 OPP. To the west of the lagoon is an embankment, screening it from the M11 Motorway. A swale is located to the west of the embankment which takes the outflow from the lagoon and joins the Washpit Brook via the 'low flow channel' close to the flow control structure. The swale / 'low flow channel' supports marginal and emergent wetland plants and provides a valuable habitat for species associated with wetland habitat.

11.62 Between the 'low flow channel' and the Washpit Brook is an area of grassland that floods occasionally during winter and is infrequently cut, which has enabled the development of a relatively tussocky sward.

11.63 To the west of the Washpit Brook and immediately south-west of the flow control structure is an area of lowered ground which is designed to flood during winter, and which was constructed during Phase 1 of the 2013 OPP. This area supports an extensive area of emergent wetland plants on boggy ground (in summer) or with standing water (in winter); it has been classified as a floodplain wetland mosaic in the UKHAB survey undertaken in 2024. This area is of particular value for a range of species, as described in subsequent sections.

11.64 The mosaic of wetland habitats and associated grassland and tree planting constructed as part of Phase 1 is of significant importance for wildlife. It measures approximately 8ha in size which is below the 10ha threshold for habitat mosaics to be considered as County Wildlife Sites[6] and it is therefore considered to be of less than County importance, but at least Local importance for nature conservation.

6 Cambridgeshire and Peterborough County Wildlife Sites: Selection Criteria. Version 7.1. October 2020.

Figure 11.1 Ecological Features within the Site

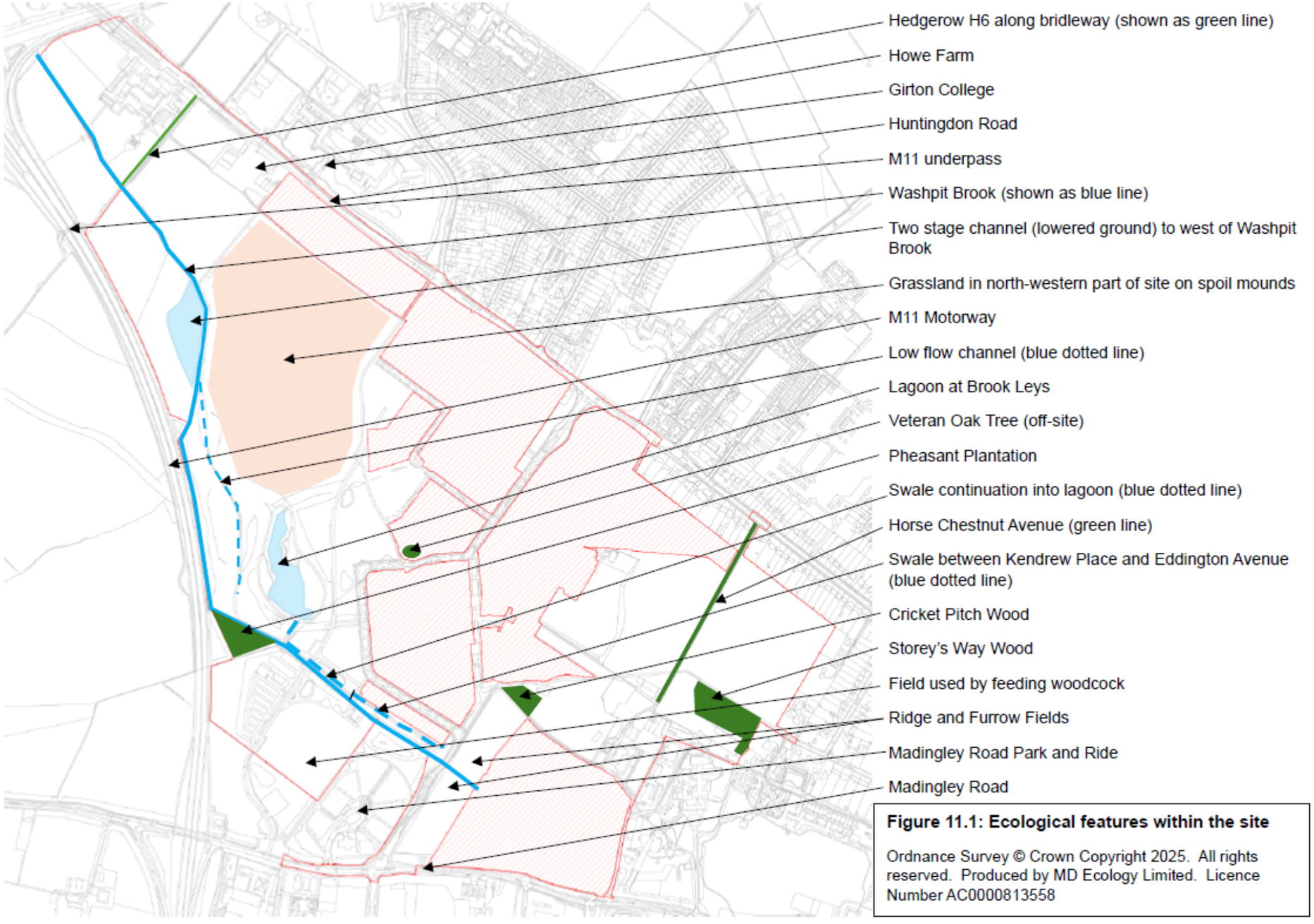


Figure 11.1: Ecological features within the site

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Ponds

11.65 There are three permanent ponds within the site (see Figure 11.2 and **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 5**):

- A pond at Gravel Hill Farm (Pond P5), which is small and shallow and prone to drying out;
- A small pond adjacent to Eddington Avenue (Pond PA1), constructed in 2015/2016 to attenuate runoff from Eddington Avenue before discharging into the Washpit Brook, and which is choked with common reed; and
- Another small pond adjacent to Eddington Avenue and on the opposite side of the brook from PA1 (Pond PA2), constructed in 2015/2016 to attenuate runoff from Eddington Avenue before discharging into the Washpit Brook, also choked with common reed.

11.66 Ponds PA1 and PA2 support great crested newts and have occasionally been used by water voles, and would therefore qualify as habitats of principal importance for the conservation of biodiversity. Pond P5 is of low quality and does not support either species, and is therefore considered unlikely to qualify. However, none of the ponds support diverse wetland plant communities and none would be likely to meet the criteria for designation of County Wildlife Sites.

11.67 Overall, given the quality of the ponds within the site and the relatively low number of them, the ponds are considered to be of Local importance for nature conservation

11.68 There are numerous off-site ponds that were surveyed for great crested newts and, in some cases, common toads. None of these are considered likely to be affected by the Proposed Development and have therefore been excluded from the assessment.

11.69 There are also six temporary ponds within the construction site for Phase 1. These have only temporary planning permission and would be expected to be removed once the temporary haul road and construction site car park are removed.

Figure 11.2 Indicative Locations of Ponds and Newt Fencing

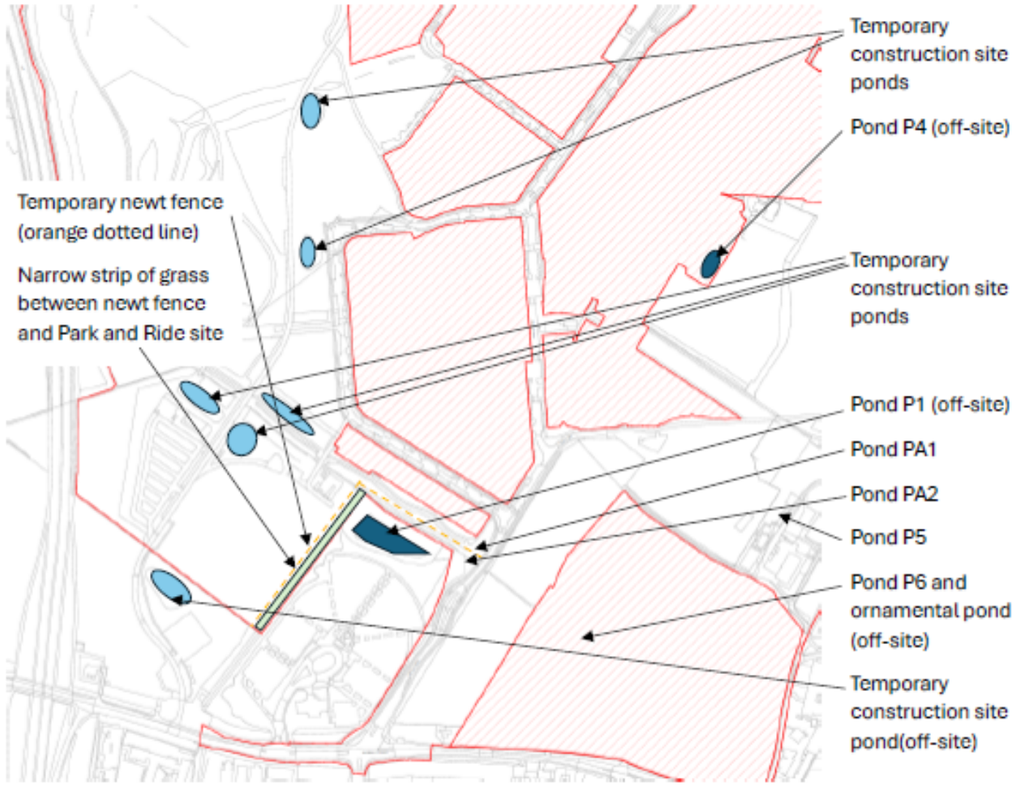


Figure 11.2: Indicative locations of ponds and newt fencing

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Woodlands

11.70 There are three areas of woodland within the site boundaries (see Figure 11.1):

- Pheasant Plantation in the south-western part of the site is lowland mixed deciduous woodland that is ash dominated with frequent to locally abundant pedunculate oak and elm. The woodland ground flora is relatively impoverished with nettle forming a prominent component;
- Cricket Pitch Wood, located immediately to the south of the cricket pitch, is also lowland mixed deciduous woodland. It is also ash dominated with frequent to locally abundant pedunculate oak and elm, but with sweet chestnut also frequent. Again, the woodland ground flora is relatively impoverished with nettle forming a prominent component; and
- Storey's Way Wood, located to the north-east of Gravel Hill Farm, is plantation woodland primarily dominated by broadleaved trees with an adjacent area of mixed woodland along the eastern and southern boundaries. Tree species present include pedunculate oak, ash, white willow, sycamore, hornbeam, pear, Jacquemont's birch, as well as larch, Lawson's cypress and Scot's pine.

11.71 Lowland mixed deciduous woodland is a habitat of principal importance for the conservation of biodiversity. However, the woodlands within the site are small and relatively poor in terms of habitat quality; there are

numerous larger woodlands in the surrounding area beyond the site. Furthermore, none of the three woodlands within the site would be likely to meet the criteria for designation of County Wildlife Sites.

11.72 Overall, the woodlands are considered to be of Local importance for nature conservation.

Hedgerows

11.73 There are 19 hedgerows within the site, as listed in Table 11.2 below, 16 of which comprise native species. Only two of the hedgerows are species-rich and only seven would be considered 'important' under the Hedgerows Regulations 1997, according to the Wildlife and Landscape criteria.

Table 11.2 Hedgerows within the site

Hedgerow Reference (see ES Volume 3, Appendix: Ecology and Biodiversity – Annex 5)	Description	Importance Under the Hedgerows Regulations 1997 (according to the Wildlife and Landscape criteria)
H4	Native hedgerow	Not important
H6	Native hedgerow with trees	Important
H7	Native hedgerow	Important
H8	Native hedgerow	Important
H9	Native hedgerow with trees	Important
H10	Native hedgerow	Important
H18	Native hedgerow	Not important
H19	Species-rich native hedgerow with trees	Important
H20	Non-native ornamental hedgerow	Not important
H21	Native hedgerow	Not important
H22	Native hedgerow	Not important
H23	Native hedgerow	Not important
H24	Native hedgerow	Not important
H25	Native hedgerow	Not important
H26	Native hedgerow	Important
H29	Non-native ornamental hedgerow	Not important
H30	Species-rich native hedgerow with trees	Not important
H31	Native hedgerow	Not important
H32	Species-rich native hedgerow with trees	Important

11.74 The hedgerows are generally typical of agricultural hedgerows present in the wider landscape. They do not meet the criteria for designation of County Wildlife Sites on the basis of their low species diversity and generally low levels of connectivity.

11.75 Overall, therefore, the hedgerows are considered to be of Local importance for nature conservation.

Other Linear Features and Wildlife Corridors

11.76 There are several lines of trees on site that form potentially valuable habitats for wildlife as well as strategic corridors for the movement of wildlife. In particular:

- The Horse Chestnut Avenue – this avenue of mature horse chestnut trees in the eastern part of the site (see Figure 11.1) provides valuable habitat for invertebrates, bats and birds, and is likely to be used as a corridor to allow wildlife to move in a north-south direction across this part of the site; and
- The Washpit Brook in the northern part of the site is lined by mature trees – white willows in the most northerly section, between the A14 and the bridleway that links to the M11 underpass, and ash and other species between the bridleway and the length parallel to the M11.

11.77 The swale located parallel to the Washpit Brook in the southern part of the site, constructed as part of Eddington Phase 1 (the 2013 OPP), and associated tree planting, also provides a valuable wildlife corridor (see Figure 11.2). It is fed by drainage water from Phase 1, close to the new ponds at Eddington Avenue, and outfalls into the lagoon at Brook Leys, close to Pheasant Plantation. There is a narrow strip of land between the swale and the Washpit Brook which is difficult to access and therefore relatively undisturbed. The swale and brook together effectively provide a larger wildlife corridor than each would individually.

11.78 All of these features are considered to be of Local importance for nature conservation.

Other Habitats

11.79 The site also supports areas of grassland, classified as 'other neutral grassland' or 'modified grassland', unmanaged areas dominated by weeds, classified as 'tall forbs', areas of bare ground due either to topsoil stripping or use as temporary construction areas, and patches of scrub. These habitats are described in detail in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 6**. None of these habitats are of particular nature conservation value and they will therefore not be considered further in this assessment. Impacts on these habitats as well as those listed above, are accounted for in the BNG calculation, as provided in BNG Assessment submitted as part of this OPA.

Species / Species Groups

Notable Plants

11.80 Bee orchid and lizard orchid were recorded in 2025 close to the current sports pavilion in Phase 1 (outside the site boundaries) and on landscaped mounds alongside the northern part of Eddington Avenue (within the site) by the contractors undertaking landscape maintenance works. Neither species was visible during the June 2024 habitat and notable plants survey (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 6**).

11.81 Pyramidal orchid was previously recorded within the Madingley Road Park and Ride (outside the site boundaries) during biodiversity monitoring in 2018 and again in 2019, but has not been recorded since. Given that the only location within the site where these plants have been recorded is on landscape mounds within Eddington Avenue, which will not be affected by the Proposed Development, they will not be considered further in this assessment.

11.82 No plant species of principal importance for the conservation of biodiversity in England have been recorded on site, nor any invasive non-native species (a previous infestation of giant hogweed has been treated and the plant was not detected in 2024).

Invertebrates

11.83 The majority of the site comprises habitats likely to support an invertebrate fauna of relatively low nature conservation value. The habitat features within, or immediately adjacent to, the site that could be of value for invertebrates are (see Figure 11.1 and Figure 11.2 and **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 6**):

- Veteran Oak Tree;
- Larger blocks of woodland (Pheasant Plantation, Cricket Pitch Wood and Storey's Way Wood);
- Native species-rich hedgerows and ecologically valuable lines of trees, including the Horse Chestnut Avenue;
- Washpit Brook and associated bankside trees;
- Lagoon and reedbeds at Brook Leys;
- Other wetland habitats, including floodplain wetland mosaic in the northern part of the survey area, bioswales, ponds and reedbeds; and

- Grassland within the Ridge and Furrow fields.

11.84 Whilst these are located within the site boundaries, or immediately outside in the case of the Veteran Oak Tree, they will be retained by the Proposed Development. Impacts on all of these features, with the exception of the Ridge and Furrow Fields, have been assessed in this chapter. No impacts on the Ridge and Furrow Fields are predicted. This assessment will therefore account for any impacts on invertebrates also. They were therefore not specifically targeted for detailed invertebrate surveys.

11.85 Further invertebrate surveys were undertaken in the eastern part of the site, focusing on the area to the west of Gravel Hill Farm that has previously been topsoil stripped and supports a mosaic of habitats including bare ground, ruderal vegetation and scrub, with topographical variation created by spoil mounds. The survey included the Horse Chestnut Avenue and Storey's Way Wood due to their proximity to this area. See **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 7** for further details.

11.86 In total 245 invertebrate species were recorded during the further invertebrate survey. These comprised mainly widespread and common species of grassland, woodland and scrub habitats. Nevertheless, several notable species were recorded:

- The timberworm beetle *Lymexylon navale* was found in numbers around a pile of oak tree trunks, felled during site clearance for Phase 1. This Nationally Scarce species is associated with decaying oak and sweet chestnut trunks and branches and is very likely breeding within the log pile;
- The tenebrionid beetle *Pseudocistela ceramboides* was recorded at a light trap. This Nationally Scarce species is associated with wood mould in tree cavities and is likely to be breeding within the site's woodland and hedgerows;
- The Tree Snipefly *Chrysopilus laetus* was recorded on foliage along the lane on the southern boundary. This is another Nationally Scarce saproxylic (deadwood) species and is particularly associated with water-filled rot holes. It is considered likely to be breeding close to the area where the record was made;
- The hoverfly *Mallota cimbiciformis* was found visiting a sap run on a mature Horse Chestnut tree within the avenue. This Nationally Scarce fly breeds in moist wood mould in tree hollows;
- The Nationally Scarce leaf beetle *Podagrica fuscipes* was swept from its host plant common mallow at the southern end of the Horse Chestnut Avenue. Three weevil species that are restricted to mallows were also swept from the same stand of the plant;
- The butterflies white-letter hairstreak and small heath were recorded in the western part of the site. White-letter hairstreak was recorded flying over a line of wych elm trees on two occasions. Small heath was present in a nearby grassland area. Both species are relatively widespread in south-eastern England but are in steep decline and are classed as Vulnerable in the latest IUCN Red List assessment, as well as being listed as Priority Species on Section 41 of the NERC Act; and
- In total 138 moth species were recorded across nocturnal and daytime surveys. No particularly scarce species were recorded, although species that are regarded as localised include the micro-moths *Eidophasia messingiella*, *Coleophora binderella*, *Sitochroa verticalis* and *Scoparia basistrigalis*. Two species classed as Nationally Scarce, *Nemapogon koenigi* and *Ectoedemia heringella*, are now known to be widespread in southern England. Four species of clearwing moth were recorded, comprising orange-tailed clearwing *Synanthedon andrenaeformis*, red-belted clearwing *Synanthedon myopaeformis*, lunar hornet moth *Sesia bembeciformis* and hornet moth *Sesia apiformis*. Numerous emergence holes of the latter species were noted in poplar tree trunks in Storey's Way Wood.

11.87 Most of the notable species of invertebrate recorded during the current survey are saproxylic species associated with various dead and decaying wood habitats, such as rot holes, leaf mould and decaying heartwood. The most important features of the site for these species are the Horse Chestnut Avenue, Storey's Way Wood, the wooded lane on the site's southern boundary and the pile of felled oak trunks.

11.88 The notable gall weevil *Gymnetron veronicae* was recorded during ecological monitoring in 2024, outside of the current site, within Phase 1 of the 2013 OPP (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 6**); this species is associated with swales and unlikely to be affected by the Proposed Development.

11.89 It is difficult to assign a scale of importance to invertebrates, but given the relatively low numbers of nationally scarce species present within the surveyed area, the overall assemblage is considered unlikely to be of greater than Local importance for nature conservation.

Great Crested Newt

11.90 Great crested newts (GCNs) are known to be present in two ponds within the site:

- Pond PA1, a small pond located to the west of Eddington Avenue and immediately north of the Washpit Brook (see Figure 11.2); and
- Pond PA2, a small pond located to the west of Eddington Avenue and immediately south of the Washpit Brook (see Figure 11.2).

11.91 GCN eDNA was recorded in both ponds. Both ponds are choked with common reed and therefore could not be surveyed by torchlight survey. Pond PA1 was too shallow to set bottle traps, and was completely dry by April 2025. No GCNs were recorded in Pond PA2. It was therefore not possible to determine the size class of the population using these ponds, but it is likely that they are used by only low numbers that are associated with the off-site pond in the Madingley Road Park and Ride (Pond P1 – see below). These ponds were constructed in 2015/2016 as part of Phase 1 of the 2013 OPP.

11.92 GCNs are also known to be present in three off-site ponds, all of which were used by this species between 2005 and 2011 (and likely prior to 2005), and impacts on the populations associated with them were therefore assessed as part of the 2012 ES:

- Pond P1, a large pond located at the northern end of the Madingley Road Park and Ride (see Figure 11.2);
- Pond P6, a network of inter-connected ponds located within the Bird Sanctuary City Wildlife Site, between Conduit Head Road and Lansdowne Road (see Figure 11.2); and
- Pond P6 ornamental, a small rectangular ornamental pond within a garden setting, adjacent to Pond P6 (see Figure 11.2).

11.93 Pond P1 supported a 'small' population size class of GCNs between 2005 and 2011 (maximum count of two individual GCNs), albeit more well-linked to Pond P6 at that time and therefore may have been part of a 'medium' population (see below). The numbers of GCNs seen in the pond increased during monitoring surveys visits undertaken in 2016 and 2019, with a 'medium' population present (maximum count of 78 individuals in 2016 and 19 individuals in 2019). No GCNs were recorded in 2022.

11.94 The 2025 bottle trapping surveys recorded a maximum count of 23 individual GCNs in Pond P1, which confirms the continued presence of a 'medium' population (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 8**).

11.95 Pond P6 and the adjacent ornamental pond supported a 'medium' population size class between 2005 and 2011, as was the case in 2016. Since then there has been a noticeable decline in the population and no GCNs were recorded during torchlight surveys in 2022 or most recently in 2025 (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 8**). Bottle trapping of Pond 6 and the ornamental pond has never been undertaken due to the concerns of the owners.

11.96 GCNs are still present in Pond P6 and the ornamental pond, given the positive result from the eDNA survey. However, the population is considered to be in the 'small' size class.

11.97 None of the other ponds surveyed were found to support GCNs.

11.98 Permanent newt fencing was installed alongside Eddington Avenue, either side of the Washpit Brook when the road was constructed as part of Phase 1 of the 2013 OPP, under the project's Natural England GCN Mitigation Licence. Ledges were constructed in the culvert that carries the Washpit Brook under Eddington Avenue to allow newts to continue to move between Ponds P1 and P6. It has not been possible to confirm that GCNs pass through the culvert, nor how often this occurs.

11.99 GCNs use ponds for breeding and foraging. This species also uses terrestrial habitats away from ponds for foraging and hibernation. The population associated with Pond P1 (and Ponds PA1 and PA2) is likely to use the grassland and scrub immediately surrounding the pond. The permanent newt fence referred to above as well as temporary newt fencing, also installed as part of Phase 1 under the licence, limits the extent to which these newts can access the site. This is limited to a narrow strip of grassland along the western side of the Madingley Road Park and Ride (see Figure 11.2) and the area immediately around Ponds PA1 and PA2.

11.100 GCNs associated with Pond P6, or those which pass through the culvert under Eddington Avenue, can access additional terrestrial habitat within the site, specifically the grassland within the Ridge and Furrow Fields and the woodland habitat within Cricket Pitch Wood. A line of temporary newt fencing prevents newts from accessing completed parts of Phase 1, although this stops at the north-east corner of Cricket Pitch Wood. It is therefore possible that newts associated with Pond P6 (and the ornamental pond) could access the area of grassland, ruderal vegetation and bare ground to the west of Gravel Hill Farm. This is considered relatively unlikely given the small size of the population associated with Pond P6, the distance between the pond(s) and the site (at least 140m) and the presence of more valuable habitat associated with the gardens of properties on Conduit Head Road and Lansdowne Road. In addition, no GCNs were recorded under refuges used for reptile surveys in this part of the site. However, the presence of GCNs in this part of the site cannot be ruled out.

11.101 GCN is listed as a species of principal importance for the conservation of biodiversity as well as being protected under the Conservation of Habitats and Species Regulations 2017 (as amended). There are relatively few known populations of the species within the city of Cambridge and, although the species occurs more commonly in other parts of the county its distribution is patchy. As a result the population of GCNs associated with Ponds P1 (and Ponds PA1 and PA2) and P6 is considered to be of County importance for nature conservation.

Common Toad

11.102 A population of common toads is present within off-site ponds (see Figure 11.2 and **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 8**):

- Pond P6 supports small numbers of toads, with a peak count of 6 toads in 2025;
- Pond P1 is assumed to still support toads although it could not be surveyed effectively in 2025 due to the density of common reed on the banks and in the margins precluding a torchlight survey; a peak count of 200 toads was recorded in 2011;
- Pond P4 supports a relatively substantial number of animals, with a peak count of 61 toads in 2025, and 100 toads in 2011.

11.103 Common toads have also been recorded within the site, using the lagoon at Brook Leys in small numbers (peak count of 2 toads in 2025). Toads were also recorded under reptile refuges on the southern edge of Pheasant Plantation.

11.104 Toads breed in ponds in spring and use terrestrial habitats for much of the remainder of the year. It is therefore likely that the toads associated with the lagoon and the off-site ponds also use habitat within the site (Ponds P1 and P4 in particular, due to their proximity to the site boundary).

11.105 Common toad is listed as a species of principal importance for the conservation of biodiversity. Toad populations with peak counts of 500 or more individuals can be designated as County or City Wildlife Sites; the peak counts of toads at ponds within and adjacent to the site are substantially lower than this, and the toad population is therefore not large enough to be considered of County importance for nature conservation. As a result the toad population is considered to be of Local importance for nature conservation.

Other Amphibian Species

11.106 Common frog and smooth newt (and possibly also palmate newt) are also present on site. None of these species are priorities for conservation nor are they legally protected. They are therefore not considered further in this assessment.

Reptiles

11.107 No reptiles were recorded on site during the 2025 targeted surveys and none have been recorded during any of the previous surveys (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 9**). However, the site provides suitable habitat for grass snakes, specifically the Washpit Brook corridor, ponds, lagoon and other wetland habitats, and there are recent desk study records of this species being present within 2km. The presence of grass snakes at low densities is therefore assumed for the purposes of this assessment. Grass snakes are listed as a species of principal importance for the conservation of biodiversity as well as being partially protected under Section 9 of the Wildlife and Countryside Act 1981 (as amended).

11.108 The population, if present, would be considered to be of Local importance for nature conservation.

Barn Owl

11.109 A barn owl nest site was recorded within one of the buildings on site in 2024. The location of the nest site is confidential and has therefore not been stated here, but is detailed in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 12**. Evidence has also been recorded of barn owls roosting in other nearby buildings within the site.

11.110 At least one barn owl was recorded foraging within the areas of grassland in the north-western part of the site during four of the seven winter bird survey visits in 2024/2025. Barn owls have occasionally been seen in the eastern part of the site by local residents, although none were recorded during any of the 2024 or 2025 breeding or winter bird survey visits.

11.111 A single pair of barn owls is likely to be present within the site. Barn owls receive special protection, being listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). They are not identified as a species that is rare or declining, and are described in the 2019 Cambridgeshire Bird Report[7] as common and widespread, but are listed as notable in the University of Cambridge's Biodiversity Action Plan[8]. The barn owls using the site are therefore considered to be of Local importance for nature conservation.

Skylark

11.112 At least nine pairs of skylark were recorded within the grassland area in the north-western part of the site during the 2024 breeding season (see Figure 11.1 and **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 10**). Skylark is listed as a species of principal importance for the conservation of biodiversity and the population is declining nationally, being listed on the Birds of Conservation Concern Red List (Stanbury et al, 2021[9]). Skylarks are described in the 2019 Cambridgeshire Bird Report as abundant. A total of 680 probable territories were noted in the 2019 Bird Report for the county from 77 surveyed sites. The number of pairs at the site is therefore typical of what is likely to be found elsewhere within the county.

11.113 The relevant criterion for designating a County or City Wildlife Site is for the site to support 0.5% or more of the national population. Given the distribution of skylarks across the UK, and that the site is not disproportionately valuable for this species, the site's population will fall substantially below this threshold and is therefore not large enough to be considered of County importance for nature conservation. As a result the breeding skylark population is considered to be of Local importance for nature conservation.

7 Cambridge Bird Club (2019). Cambridgeshire Bird Report 2019.
8 https://www.environment.admin.cam.ac.uk/files/uoc_bap.pdf

9 Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.

11.114 Use of the site by skylarks in the winter is relatively low, with a peak count of at least six birds (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 11**). The site is therefore not considered to be of particular importance for wintering skylarks.

11.115 As is the case for all wild birds, skylarks are protected whilst nesting under the Wildlife and Countryside Act 1981 (as amended).

Whitethroat

11.116 At least 20 pairs of whitethroat were recorded across the site, the majority of which were within the grassland area in the north-western part of the site (see Figure 11.1 and **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 10**). Whitethroat is not listed as a species of principal importance for the conservation of biodiversity but is listed on the Birds of Conservation Concern Amber List. Whitethroats are described in the 2019 Cambridgeshire Bird Report as very common, with 506 probable territories in the county at 89 sites. The site does appear to support a relatively high density of whitethroats but given the numbers present and how common this species is, the site's population will fall substantially below the threshold for designating a County or City Wildlife Site and is therefore not large enough to be considered of County importance for nature conservation. The breeding whitethroat population is therefore considered to be of Local importance for nature conservation.

11.117 Whitethroats are summer visitors and therefore do not use the site during winter.

11.118 As is the case for all wild birds, whitethroats are protected whilst nesting under the Wildlife and Countryside Act 1981 (as amended).

Linnet

11.119 Up to nine pairs of linnets were recorded within the area around Howe Farm and the grassland area in the north-western part of the site (see Figure 11.1 and **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 10**). Linnet is listed as a species of principal importance for the conservation of biodiversity and is declining nationally, being listed on the Birds of Conservation Concern Red List. They are described in the 2019 Cambridgeshire Bird Report as common. The site's linnet population will fall substantially below the threshold for designating a County or City Wildlife Site and is therefore not large enough to be considered of County importance for nature conservation. As a result the breeding linnet population is considered to be of Local importance for nature conservation.

11.120 Linnets were only recorded using the site once during the winter bird surveys; a single flock of approximately 25 birds was recorded during the March 2025 visit (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 11**). The site is therefore not considered to be of particular importance for wintering linnet.

11.121 As is the case for all wild birds, linnets are protected whilst nesting under the Wildlife and Countryside Act 1981 (as amended).

Woodcock

11.122 Up to eight birds were recorded on site during the winter bird surveys, feeding within the southern part of the site, to the east of Pheasant Plantation (see Figure 11.1). Woodcock were also flushed from an area of grassland in the north-western part of the site during January and March 2025, and up to two birds were flushed from daytime roost sites in Storey's Way Wood. See **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 11** for further details. Woodcock were not recorded using the site during the breeding season surveys.

11.123 Woodcock are declining nationally, being listed on the Birds of Conservation Concern Red List. They are described in the 2019 Cambridgeshire Bird Report as a common winter visitor, with 109 records from 42 sites in the non-breeding season. The number of birds using the site therefore represents a potentially substantial proportion of the county's wintering population. However, this still falls well below the threshold for designating a County or City Wildlife Site and therefore the wintering woodcock population is considered to be of Local importance for nature conservation.

Other Birds

11.124 Other bird species of conservation concern that were considered likely to be (or possibly) breeding on site were (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 10**):

- Mallard
- Stock dove
- Woodpigeon
- Moorhen
- Kestrel (possibly nesting off-site but hunting on site)
- Sedge warbler
- Wren
- Treecreeper
- Starling
- Song thrush
- Mistle thrush
- Dunnock
- Bullfinch
- Greenfinch
- Reed bunting

11.125 All wild birds are protected whilst nesting under the Wildlife and Countryside Act 1981 (as amended).

11.126 The following other bird species of conservation concern were recorded on site during the non-breeding season (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 11**):

- Greylag goose
- Mute swan
- Mallard
- Teal
- Pochard
- Stock dove
- Woodpigeon
- Moorhen
- Snipe
- Black-headed gull
- Herring gull
- Lesser black-backed gull
- Sparrowhawk
- Red kite
- Kestrel
- Rook

- Wren
- Starling
- Song thrush
- Mistle thrush
- Redwing
- Fieldfare
- Dunnock
- Meadow pipit
- Bullfinch
- Greenfinch
- Reed bunting

11.127 These species are primarily associated with habitat features that will be retained, including the permanent wetland habitat and areas of woodland and scrub, and/or have been recorded in very low numbers. As a result, significant effects on such species are not anticipated and they will therefore not be considered further in this assessment.

Barbastelle Bat

11.128 Barbastelle bats have been recorded using the site for foraging and/or commuting between roosts and foraging areas. The nearest known barbastelle bat roosts are at Madingley Wood and the church at Madingley, approximately 2km to the west of the site and on the opposite side of the M11 Motorway. There is also a desk study record of a roosting barbastelle from within Cambridge, but approximately 4km from the site on the other side of Cambridge. There are also desk study records of this species from Girton (but these are flight rather than roost records) and numerous records from further afield. The links between Madingley Wood and the site are either along Madingley Road or through the M11 underpass at the northern end of the site (see Figure 11.3).

11.129 Barbastelle bats were not recorded during the transect surveys, which finish approximately 2 hours after sunset.

11.130 Generally, they were recorded in low numbers, averaging approximately one or two passes per night with the exceptions of:

- The spoil mounds in Phase 2B and 2C in the western part of the site (see Figure 11.3) – very low levels of activity by barbastelle bats were recorded, averaging 0.2 passes per night; and
- The Washpit Brook (see Figure 11.3) – much higher numbers than the average were recorded along the Washpit Brook, at an average of five passes per night.

11.131 In general, there appears to be a higher level of barbastelle bat activity in the western part of the site (associated with woodland, hedgerows and the tree-lined Washpit Brook) than in comparable habitats in the eastern part of the site. This species may be flying onto the site from Madingley Wood, via the M11 underpass at the northern end of the site. They may also cross the site to Huntingdon Road and Girton College on the opposite side, using the hedgerow alongside the access track that links with the underpass (Hedgerow H6 on Figure 11.3) and the parallel hedgerow H8. Barbastelle bats are likely to commute through the western part of the site primarily along the edge of Pheasant Plantation and the Washpit Brook.

11.132 Barbastelle bats are likely to be moving between the eastern and western parts of the site, using the swale between Eddington Avenue and Kendrew Place and/or through the northern end of the Madingley Road Park and Ride (see Figure 11.3). The movement of barbastelle bats across the eastern part of the site is likely to involve the Ridge and Furrow Fields, Cricket Pitch Wood and the hedgerow on the site's southern boundary between Cricket Pitch Wood and Gravel Hill Farm (see Figure 11.3). In order to access Storey's Wood and the Horse Chestnut Avenue the bats must cross open areas with some level of lighting, either from Gravel Hill Farm or from adjacent areas of Cambridge to the east of the site.

11.133 The data suggest that the Washpit Brook is disproportionately important as a commuting route and/or a foraging habitat in the context of the habitats present within the site. However, this species is known to occur throughout Cambridge and its presence in low numbers elsewhere across the site is not of particular significance in a local context.

11.134 The times relative to sunset when barbastelle bats were first recorded on the automated detectors averaged at 45 minutes or more after the average emergence time for the species (average first record time was between 69 and 88 minutes after sunset, average emergence time reported in Collins (2023)[10] is 24 minutes after sunset); see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 13**) and the majority of the records of barbastelle bat were from around midnight to 2am. It is therefore highly unlikely that this species roosts on site, but rather that it flies into site from roosts in the surrounding area.

11.135 Barbastelle bats are listed as a species of principal importance for the conservation of biodiversity but given the relatively low levels of use of the site by this species, and given how common it is in Cambridge, the barbastelle bat population is considered to be of Local importance for nature conservation.

Brown Long-Eared Bat

11.136 There is a brown long-eared bat roost within the roofspace of the farmhouse at Gravel Hill Farm. No bats were present during the inspection in August 2024 but droppings were recorded under the ridge, none of which were fresh. These were confirmed to be from brown long-eared bats through DNA analysis. The number and location of the droppings was consistent with use by small numbers of bats (or possibly one individual), as was found to be the case in previous years of survey. Follow up dusk emergence surveys in 2025 did not record any bats emerging from the building. See **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 12** for further details.

11.137 Based on the survey results the roost is considered to be a small and irregularly used roost. A maternity roost is considered unlikely to be present. Bats and their roosts are protected under the Conservation of Habitats and Species Regulations 2017 (as amended).

11.138 A brown long-eared bat roost was previously present in the roofspace of the farmhouse at Howe Farm in the north-western part of the site. This building was demolished under a Natural England licence in 2024 under the 2013 OPP.

11.139 There are numerous known brown long-eared bat roosts across Cambridge. The closest records are from a house on Huntingdon Road immediately adjacent to the site, and at Girton College.

11.140 Brown long-eared bats forage across the site. Relatively low numbers of passes were recorded (average of 3 passes per night or fewer) but this species frequently goes undetected and so actual levels of activity may be higher than this would suggest.

11.141 There were noticeably higher than average levels of activity by brown long-eared bats recorded on the automated bat detectors between Cricket Pitch Wood and Traveller's Rest Pit SSSI (see Figure 11.3) and at Pheasant Plantation (see Figure 11.3), which may indicate the presence of a roost in these areas, although the average times of the earliest record each evening of brown long-eared bats was after the average emergence times for the species according to Collins (2023), which may indicated that the roost is off-site or is irregularly used. The average first record time was between 73 and 101 minutes after sunset, compared with the average emergence time reported in Collins (2023) of 54-62 minutes after sunset. Both of the locations where higher than average levels of activity by brown long-eared bats were recorded on the automated bat detectors are relatively close to Gravel Hill Farmhouse where an occasionally used brown long-eared bat roost was identified.

[10] *Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.*

11.142 Brown long-eared bats are listed as a species of principal importance for the conservation of biodiversity but given the relatively low levels of use of the site by this species, and that it is relatively common in Cambridge, the brown long-eared bat population is considered to be of Local importance for nature conservation.

Noctule Bat

11.143 Noctule bats tend to roost in cavities in trees. There are several roosts known within 10km of the site although none of these are in very close proximity, and these are therefore of limited relevance given the likely presence of roosts in the vicinity based on field survey results (see below).

11.144 Noctule bats were recorded regularly during the transect surveys, often around the time of sunset. They were also recorded on automated bat detectors with the average earliest record each evening being several minutes before sunset at several locations. This suggests that noctule bats are roosting on site or in very close proximity; it is likely that there are multiple roosts within the site and immediate surroundings. Based on the numbers and timings of calls recorded, it is considered likely that there is a roost in Cricket Pitch Wood or Storey's Way Wood, or both. It is also likely that there is a roost in Pheasant Plantation and bats have been observed flying onto site at sunset from Girton College, where an off-site roost is considered likely to be present.

11.145 Noctule bats are likely to use all habitats across the site for foraging, although noticeably higher numbers of passes by this species were recorded on the automated detectors between Cricket Pitch Wood and Traveller's Rest Pit, adjacent to the swale between Eddington Avenue and Kendrew Place, where noctules were often recorded during transect surveys and at Pheasant Plantation, close to Brook Leys where noctules were also regularly recorded during the transect surveys see (Figure 11.3).

11.146 Noctule bats are listed as a species of principal importance for the conservation of biodiversity. There are relatively high levels of use of the site by noctules, but this species is relatively common; the noctule bat population is considered to be of Local importance for nature conservation.

Other Bat Species

Common and Soprano Pipistrelle

11.147 Both common and soprano pipistrelle bats were recorded at all locations across the site during both the transect surveys and on all automated bat detectors. Particularly high levels of activity were recorded at Horse Chestnut Avenue, adjacent to the swale between Eddington Avenue and Kendrew Place and at Pheasant Plantation, with an average number of passes per night, for both species combined, of more than 150. Significantly lower levels of activity by these species were recorded within the area of the spoil mounds in Phase 2B and 2C in the western part of the site, with only 34 passes per night on average for both species combined. The transect surveys in this part of the site suggested that common and soprano pipistrelles use the northern edge of the site and the gardens of off-site properties on Huntingdon Road primarily.

11.148 The times relative to sunset when common pipistrelles were first recorded on the automated detectors suggest that there are roosts nearby to all monitored locations, and that there is likely to be a roost (or more than one roost) in the eastern part of the site. Common pipistrelles have previously been recorded roosting at Gravel Hill Farm (farmhouse) and within bat boxes in Storey's Way Wood, Cricket Pitch Wood and Pheasant Plantation. They are also likely to roost in off-site buildings. Bats and their roosts are protected under the Conservation of Habitats and Species Regulations 2017 (as amended).

11.149 The times relative to sunset when soprano pipistrelles were first recorded on the automated detectors suggest that there are likely to be roosts within the site in both the eastern and western parts of the site. Soprano pipistrelles are also likely to be roosting within bat boxes in Storey's Way Wood, Cricket Pitch Wood and Pheasant Plantation as well as within off-site buildings.

11.150 Neither species was recorded roosting within buildings on site or within trees outside of the woodlands during the 2024/2025 surveys. Both common and soprano pipistrelles are common and widespread. No known roosts will be affected by the Proposed Development. Neither species is considered to be particularly light averse (BCT and ILP 2023)[11] and they are likely to forage within gardens and open space. As a result it is considered unlikely that they would be adversely affected by the Proposed Development and they are therefore not considered further in this assessment.

Nathusius' Pipistrelle

11.151 Nathusius' pipistrelle bat was not recorded during the transect surveys but was recorded on automated bat detectors at all locations except the area of the spoil mounds in Phase 2B and 2C in the western part of the site. At locations where this species was recorded, levels of activity were generally low, averaging fewer than one pass per night.

11.152 Highest recorded levels of activity by this species were adjacent to the swale between Eddington Avenue and Kendrew Place and Pheasant Plantation. This is unsurprising given the proximity of these locations to the species' preferred foraging habitats of woodland, tree-lined river corridors and ponds (Collins 2023).

11.153 The times relative to sunset when Nathusius' pipistrelles were first recorded on the automated bat detectors suggest that this species is roosting off-site and only encountering the site late in the evening, often between midnight and 2am.

11.154 This species has been recorded across Cambridge, with the closest records being from Peterhouse College, 2-3km from the site.

11.155 The effect of artificial lighting on Nathusius' pipistrelle is unknown (BCT and ILP 2023). However, given the times that this species is likely to encounter the site, when lights will be off or dimmed, and that it already flies across the site, using the corridor associated with the swale between Eddington Avenue and Kendrew Place, artificial lighting is unlikely to have an adverse effect on Nathusius' pipistrelle. Given this, the low numbers of records of Nathusius' pipistrelle within the site, the likely absence of roosts, and that the most valuable habitats for this species will be retained, it is considered unlikely that the Proposed Development would have an adverse effect and they are therefore not considered further in this assessment.

Myotis Bats

11.156 Myotis bats, including those considered likely to be Daubenton's, were recorded at all of the locations monitored using automated bat detectors, although activity levels were generally low. Significantly higher levels of activity were recorded at Pheasant Plantation, which is unsurprising as Daubenton's bats forage over waterbodies and are likely to be attracted to the lagoon at Brook Leys, increasing the chances of this species flying past the detector at Pheasant Plantation. At the other locations there was an average of fewer than 2 passes per night.

11.157 The times relative to sunset when Daubenton's bats were first recorded on the automated detectors suggest the possible presence of a roost in the southern part of the site. This may be within Pheasant Plantation. There was insufficient data on other species of Myotis bat to draw any meaningful conclusions about the possible presence of a roost.

11.158 Artificial lighting is considered unlikely to affect commuting behaviour by Daubenton's bats, but would have a negative effect on their use of foraging habitat. There is no proposal to introduce any lighting at Brook Leys, which provides the most valuable foraging habitat for this species and no roosts would be affected as Pheasant Plantation will be retained. The effects of lighting on other Myotis species are not well understood. However, levels of use of the site by other species are likely to be low; many of the unidentified myotis bats using the site are likely to be Daubenton's bats.

[11] *Bat Conservation Trust and the Institution of Lighting Professionals (2023). Guidance Note GN08/23: Bats and Artificial Lighting at Night. ILP, Warwickshire.*

11.159 As a result, it is considered unlikely that the Proposed Development would have an adverse effect and Myotis bats are therefore not considered further in this assessment.

11.160 Very low levels of use of the site by serotine and Leisler's bats were recorded, with an average of fewer than one pass per night at each location. It is therefore considered unlikely that the Proposed Development would have an adverse effect on either species and neither species is listed as a species of principal importance for the conservation of biodiversity. They are therefore not considered further in this assessment.

11.161 Further details of the bat survey results are provided in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 12** and **ES Volume 3, Appendix: Ecology and Biodiversity – Annex13**.

Figure 11.3 Bat Corridors within the Site

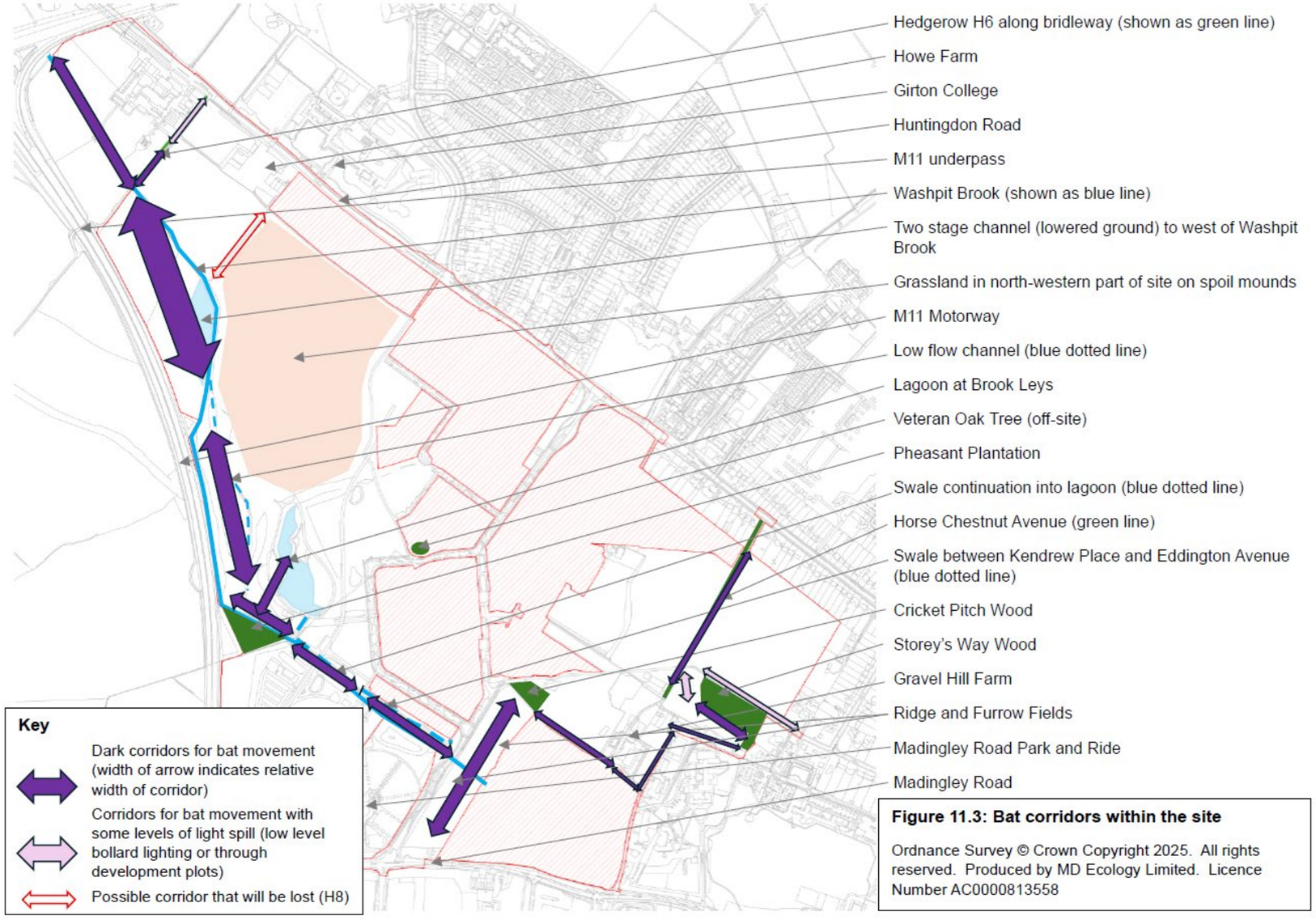


Figure 11.3: Bat corridors within the site

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Water Vole

11.162 Water voles are present throughout the western and southern parts of the site in areas of suitable habitat. This species was recorded in the following locations in 2024 (see Figure 11.1 and Figure 11.2 and **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 14**):

- Lagoon at Brook Leys (constructed as part of Phase 1);
- Low flow channel to the west of Brook Leys, which flows into the Washpit Brook (constructed as part of Phase 1);
- Two stage channel between the Washpit Brook and the M11 (constructed as part of Phase 1) – this area dries out in summer and is therefore of greater value for water voles in spring and early summer, as opposed to late summer and autumn;
- Washpit Brook at the M11 culvert and also at the Eddington Avenue culvert;
- Ponds PA1 and PA2, either side of the Washpit Brook at Eddington Avenue (constructed as part of Phase 1);
- Swale at Kendrew Place; and
- Four temporary construction site ponds – TP1, TP2, TP3 and TP4 (constructed as part of Phase 1), due to be in-filled as part of the Proposed Development.

11.163 Water voles were also recorded in off-site ponds in 2024: the pond within the Madingley Road Park and Ride (Pond P1) and a small attenuation pond adjacent to the M11 motorway (Pond P7).

11.164 The relative densities of water voles in the various habitat features within and adjacent to the site varies between locations and between early season (spring/early summer) and late season (late summer/autumn), due to reduced water levels in some of the ponds and the two stage channel making the habitat less favourable for water voles.

11.165 There has been a substantial increase in the availability of suitable habitat for water voles as a direct result of Phase 1, and a corresponding increase in the relative population size and its distribution within the site.

11.166 Water vole is listed as a species of principal importance for the conservation of biodiversity as well as being protected under Section 9 of the Wildlife and Countryside Act 1981 (as amended). The species is relatively common in Cambridgeshire and within the City of Cambridge (Glossop and Morse 2024[12]). The population within the site and immediately surrounding areas is therefore considered to be of Local importance for nature conservation.

Otter

11.167 Otters were recorded on the Washpit Brook, the low flow channel and at Brook Leys in 2024 (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 14**). There are a limited numbers of features suitable for use as otter resting sites, and no evidence of use of such features has been recorded. Otters are therefore considered likely to be exploiting foraging opportunities within the site, particularly amphibians in spring, but are not using the site for daytime resting and are unlikely to breed on site.

11.168 Otter is listed as a species of principal importance for the conservation of biodiversity as well as being protected under the Conservation of Habitats and Species Regulations 2017 (as amended).

11.169 Given the low level of use of the site by otters, and that this species is increasing its population size and range both nationally and locally, the otter population using the site is considered to be of Local importance for nature conservation.

Badger

11.170 The are numerous badger setts within the site (as set out in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 15**) and it is considered likely that there are two separate social groups: one in the eastern part of the site and one in the western part, with Phase 1 acting as a territorial boundary between the two groups.

11.171 Badgers are relatively common and not a conservation priority. It is therefore not appropriate to assess the scale of importance of the resident social group of badgers in the same way as for other ecological receptors. However, badgers and their setts are legally protected under the Protection of Badgers Act 1992 and the potential risk of breaches of the legislation therefore needed to be considered. For consistency with the treatment of other ecological receptors, badgers have been assigned Local importance for nature conservation in this case.

Brown Hare

11.172 Brown hares are regularly seen in the former farmland in the western part of the site. There is no reliable method for assessing the population size but it is likely to be typical of that associated with farmland in Cambridgeshire.

11.173 Brown hare is listed as a species of principal importance for the conservation of biodiversity but is not a protected species. The species is common and widespread in farmland within Cambridgeshire, although there are likely to be a decreasing number of locations where brown hare can be seen within such close proximity to the City of Cambridge.

11.174 Overall, the brown hare population within the site is considered to be of Local importance for nature conservation.

Hedgehog

11.175 Hedgehogs are known to be present within the site, having been recorded at Gravel Hill Farm during the construction of Phase 1 of the 2013 OPP. Hedgehogs have also been recorded off-site at Conduit Head Road during newt surveys in previous years. It is difficult to undertake detailed surveys for hedgehogs and to assess population size. They are therefore assumed to be present across the site at low relative densities, given the habitats present and given the high levels of badger activity on site (badgers are a predator of hedgehogs).

11.176 Hedgehog is listed as a species of principal importance for the conservation of biodiversity but is not a protected species. Given the likely low level of use of the site by this species, the hedgehog population using the site is considered to be of Local importance for nature conservation.

Other Mammal Species

11.177 Harvest mouse surveys of the site in 2024 failed to find confirmatory evidence of the presence of this species (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 16**). Harvest mice are therefore considered likely absent, although they may be present at very low densities. As a result they are not considered further in this assessment.

11.178 Other mammal species have been recorded using the site: field vole, bank vole, common shrew, fox and muntjac. None of these species are listed as a species of principal importance for the conservation of biodiversity and nor are they protected species. Therefore no other mammal species beyond those identified in paragraphs 11.123 to 11.171 are considered further in this assessment.

12 Glossop, A. and Morse, A. (2024). National Water Vole Database Project, Part 1: Project report for period 2013-2022. Hampshire and Isle of Wight Wildlife Trust.

RECEPTORS AND RECEPTOR SENSITIVITY

11.179 The receptors that may be affected by the Proposed Development and which are taken forward in the assessment are listed in Table 11.3 below, along with their scale of importance.

Table 11.3 Summary of ecological receptors and their scale of importance

Feature	Scale of Importance
Ascension Parish Burial Ground CiWS	County
Bird Sanctuary, Conduit Head CiWS	County
Scrub East of M11 Verge CiWS	County
Veteran Oak Tree	County
Washpit Brook	Local
Lagoon at Brook Leys and other Phase 1 wetland habitats	Local
Ponds	Local
Woodlands	Local
Hedgerows	Local
Other Linear Features and Wildlife Corridors	Local
Invertebrates	Local
Great crested newt	County
Common toad	Local
Grass snake	Local
Barn owl	Local
Skylark (breeding)	Local
Whitethroat	Local
Linnet	Local
Woodcock	Local
Barbastelle bat	Local
Brown long-eared bat	Local
Noctule bat	Local
Water vole	Local
Otter	Local
Badger	Local
Brown hare	Local
Hedgehog	Local

EMBEDDED MITIGATION

11.180 The assessment of ecological impacts and effects is based on the Parameter Plans set out in **ES Volume 1, Chapter 4: The Proposed Development**. In particular, the Proposed Development has been designed to allow the retention of the following features within areas of open space (see Figure 11.1):

- Veteran Oak Tree;
- Lagoon at Brook Leys;
- Other wetland habitats created during Phase 1:
- Washpit Book, and its riparian zone;
- All areas of woodland;
- Horse Chestnut Avenue; and
- The swale parallel to the Washpit Brook in the southern part of the site.

11.181 The Proposed Development will also provide additional open space in the southern and western parts of the site, which extends and effectively buffers the existing areas of nature conservation value.

Enabling, Demolition and Construction

11.182 There is no specific embedded mitigation measures for ecology associated with enabling, demolition and construction.

Completed Development

11.183 The assessment of effects associated with the completed Proposed Development includes the provision of new habitats and the delivery of enhancement measures for existing habitats, as would be required to achieve at least 10% BNG. In the case of watercourses and hedgerows the BNG will be measured against these specific habitat types; whilst the final achieved percentage increase in BNG cannot be guaranteed at this stage, it will need to be at least 10%. This is less clear cut in the case of other habitats, as the changes are measured across all habitat types and therefore an increase in the amount of grassland, for example, cannot be guaranteed.

11.184 The lighting control strategy, as described in the Lighting Design Concept Proposal (Document Reference NWC-MP2024-BDP-XX-RP-00001, Rev P07), includes several measures that will reduce the impact of lighting, and have been assumed as embedded mitigation measures:

- After midnight, lights on the proposed new road through the western part of the site (Cartwright Avenue) and on-plot will be automatically dimmed to 20% brightness, and will only increase to 100% brightness when triggered by a vehicle, cyclist or pedestrian, returning to the dimmed state after 30 seconds. Lights on pedestrian or cycle routes will do the same but will dim to 0% output;
- There will be no lighting of pedestrian routes along Horse Chestnut Avenue, along the track on the site's southern boundary between Gravel Hill Farm and Cricket Pitch Wood, or within the Ridge and Furrow Fields;
- No additional lighting is proposed along the swale between Kendrew Place and Eddington Avenue, and the continuation of this towards Pheasant Plantation will remain unlit on the south-west side of the hedgerow through a play area, and only limited light spill from the adjacent Plot G is likely to affect the north-east side of the hedgerow and the swale;
- There will be no lighting along Washpit Brook, within the riparian zone or to the west of the brook;
- No lighting of the edge of Pheasant Plantation is proposed, although there may be some light spill onto the eastern tip from the adjacent Plot G;
- There will be some additional light spill onto the northern edge of Cricket Pitch wood due to lighting columns being installed along Garrod Street, although these will be positioned to face away from the woodland, will be shielded to minimise rearwards light spill and lower columns at greater intervals have been proposed for this location;
- The cycleway along the northern edge of Storey's Way Wood will be lit using low level bollard lighting to minimise light spill onto the woodland edge, and avoid light spill onto trees at heights where roosts may be present; and
- The cycleway along the northern half of Hedgerow H6 will also be lit using low level bollard lighting to minimise light spill onto the hedgerow, and avoid light spill onto trees at heights where roosts may be present.

11.185 As a result, a dark corridor for nocturnal wildlife, including bats, will be retained across the site, which will link the following features (see Figure 11.3):

- Storey's Way Wood in the eastern part of the site with Cricket Pitch Wood, via the site's southern boundary;
- Cricket Pitch Wood with Pheasant Plantation, via the Ridge and Furrow Fields, the swale between Kendrew Place and Eddington Avenue, and the continuation of this swale, hedgerow and proposed play area (this will require bats to cross lit areas at Eddington Avenue and Kendrew Place but this is already the case); and
- Pheasant Plantation with the northern parts of the site, via the Washpit Brook and its riparian zone.

11.186 The dark corridor across the site will link with currently dark off-site areas via the underpass under the M11 Motorway, the Washpit Brook and Hedgerow H6; this latter corridor will have low level bollard lighting at its northern end but this links to Huntingdon Riad which is already lit.

11.187 Adherence to these measures at the detailed design stage for any reserved matters application, could be secured by way of an appropriately worded planning condition.

POTENTIAL EFFECTS

Enabling, Demolition and Construction

Ascension Parish Burial Ground City Wildlife Site

11.188 The CiWS is located immediately adjacent to the site's eastern boundary (Plots H2 and H3). There is the potential for the CiWS to be damaged by the deposition of dust on vegetation, arising from construction works in this part of the site. If unmitigated, this would result in an adverse effect at the County scale, resulting in a Moderate Adverse (**significant**) effect.

Bird Sanctuary, Conduit Head City Wildlife Site

11.189 The CiWS is not located directly adjacent to the site boundaries and is therefore considered unlikely to be affected by dust during construction. However, the ponds within the CiWS are fed by a spring rising to the south of the site's southern boundary (Plot J) and downhill from the site. There is therefore the potential for the CiWS to be damaged by waterborne pollution arising from construction works in this part of the site. If unmitigated this would result in an adverse effect at the County scale, resulting in a Moderate Adverse (**significant**) effect.

Scrub East of M11 Verge City Wildlife Site

11.190 The CiWS is not located directly adjacent to the site boundaries and is on the opposite side of Madingley Road from the Proposed Development. There are no direct hydrological links between the site and the CiWS. It is therefore considered unlikely to be affected by the Proposed Development and no effect would occur.

Veteran Oak Tree

11.191 The Veteran Oak Tree and it's Root Protection Area is located outside of the site. Direct damage to the tree or its roots is therefore unlikely to occur.

11.192 There is the potential for the tree to be damaged by the deposition of dust on it, arising from construction works in adjacent parts of the site (Plot F2).

11.193 If unmitigated, any adverse impacts would result in an adverse effect at the County scale, resulting in a Moderate Adverse (**significant**) effect.

Washpit Brook

11.194 The Proposed Development will have a limited impact on the Washpit Brook.

11.195 No additional permanent crossings or in-channel structures are required. A temporary crossing of the brook will need to be constructed in the northern part of the site to allow access across it during the sitewide cut and fill operation, which entails the movement of topsoil and subsoil into the area of land between the brook and the M11 motorway. The temporary bridge could result in an adverse impact on the Washpit Brook, dependent on its location and design.

11.196 No development will take place within the riparian zone of 10m either side of the brook with the exception of:

- The construction of Plot G;
- The creation of the play area adjacent to the brook in Amenity Cluster C (Plot K) of the open space and amenity areas;
- Soft landscaping; and
- Construction of headwalls in the banks of the brook to take outfalls from surface water runoff.

11.197 Plot G is located to the north of a swale that was constructed during Phase 1. The swale and brook are not connected hydrologically. A strip of soft landscaping with no public access is maintained between the swale and the brook. A footpath has already been constructed along the northern (Plot G) side of the swale. Plot G will therefore result in no additional encroachment into the riparian zone in comparison with the baseline, and there is no potential for pollution incidents within Plot G to have an impact on the brook.

11.198 The play area in Amenity Cluster C is located within 10m of the brook and could therefore result in encroachment within the riparian zone, dependent on the specific design of that play area.

11.199 Soft landscaping within the 10m riparian zone is only proposed in one specific location, in the northern part of the site between the brook and the M11 motorway. It is assumed that any landscape planting in this area would be sensitive to the character of the brook and would therefore have no adverse impact on it.

11.200 Several headwalls are likely to need to be constructed along the length of the Washpit Brook located to the north of the lagoon at Brook Leys. These will each have very small footprints (less than 2m wide) and will therefore result in a negligible impact in terms of habitat loss.

11.201 The construction of the play area, soft landscaping and headwalls all have the potential to result in pollution of the brook during the works.

11.202 If unmitigated, any adverse impacts would result in an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

Lagoon at Brook Leys and Other Phase 1 Wetland Habitats

11.203 New swales and attenuation features will be constructed in the western part of the site, which will outflow into the lagoon at Brook Leys. This will require the construction of a drainage discharge point into the lagoon, at its northern end. The direct impact on the lagoon will be negligible.

11.204 The construction of the discharge point has the potential to result in pollution of the lagoon during the works. If unmitigated this would result in an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

11.205 There will be no direct impacts on the existing swales, two stage channel or low flow channel within Phase 1.

Ponds

11.206 The Proposed Development will result in the loss of Pond P5.

11.207 Ponds PA1, PA2, PB and PC constructed as part of Phase 1, will be retained (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 5**). They are not located in close proximity to construction areas and are therefore unlikely to be affected by construction site pollution incidents.

11.208 Pond P6 is located off-site. It is fed by a stream that rises to the south of Plot J, and could therefore be affected by construction site pollution. No other off-site ponds receive runoff from the site and therefore no other ponds are likely to be affected by construction site pollution incidents.

11.209 Temporary construction site ponds (TP1, TP2, TP3, TP4, TP5 and TP6) will be removed.

11.210 Areas to be constructed for temporary drainage purposes, referred to as Ponds P8 and P9 for the purposes of the great crested newt survey (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 5**) are not considered to form ponds in this context.

11.211 Overall, therefore, the Proposed Development will result in the loss of one permanent pond (P5) and six temporary ponds (TP1-TP6 inclusive).

11.212 Whilst the temporary ponds to be removed from part of the current baseline, these will all need to be removed when the temporary construction site car park and haul road (associated with the construction of Phase 1 of the 2013 OPP) are removed. They would therefore be removed in any case, irrespective of whether the Proposed Development is constructed or not, and the impact of their removal is therefore not considered to represent a significant effect.

11.213 Pond P5 is the permanent pond of lowest value within the site given that it does not support great crested newts, is prone to drying out, and is relatively species poor in terms of its plant communities. It would be unlikely to qualify as a habitat of principal importance and therefore the loss of the pond is considered to be not significant, resulting in a Negligible (not significant) effect.

Woodlands

11.214 All of the woodlands within the site will be retained, including the Root Protection Area for the trees within the woodlands. The Proposed Development will not result in any loss of woodland habitat.

11.215 Works will take place in close proximity to all of the woodland blocks, and therefore the potential exists for damage to woodland habitat by the deposition of dust on vegetation or accidental damage from machinery, arising from construction works in adjacent areas. If unmitigated this would result in an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

Hedgerows

11.216 Four hedgerows will be lost as a result of the Proposed Development: H4, H8, H25 and H31 (see **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 4**). All four hedgerows comprise native species, but none are species-rich and none would be considered 'Important' under the Hedgerows Regulations 1997, according to the Wildlife and Landscape criteria. A total length of 460m of hedgerow will be lost.

11.217 Given their locations, hedgerows H4, H25 and H31 are unlikely to be particularly important as habitat or wildlife corridors, as none of these are linked to other hedgerows or woodland/scrub at both ends. Hedgerow H8 links the scrubby vegetation on the Washpit Brook with scrubby vegetation associated with the site's northern boundary, and may therefore function as a habitat or wildlife corridor.

11.218 Hedgerow H6 will be retained although a 10m gap will be required to allow the construction of pedestrian/cycle access through it. This will have a minor fragmentation impact on the hedgerow habitat to the north of the gap. Hedgerow H6 is native, species-rich and would be considered 'Important' under the Hedgerows Regulations 1997, according to the Wildlife and Landscape criteria.

11.219 Works will take place in close proximity to all of the retained hedgerows, and therefore the potential exists for damage to hedgerow habitat by the deposition of dust on vegetation or accidental damage from machinery, arising from construction works in adjacent areas.

11.220 Unless mitigated, the Proposed Development will therefore result in a short-term adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

11.221 The illustrative landscaping scheme for the Proposed Development shows the provision of new hedgerow habitat, a large proportion of which is located in areas of open space and well-linked to other hedgerow, woodland or scrub habitat. Based on the illustrative landscape design, the draft BNG calculation has assumed that 2.69km of native species-rich hedgerow would be planted. The amount of new hedgerow to be planted is subject to change as details will be confirmed at the reserved matters stage. However, there would have to be sufficient new hedgerow planted for the Proposed Development to achieve at least a 10% Biodiversity Net Gain in terms of hedgerow units; this is likely to be secured by a planning condition.

11.222 It is therefore reasonable to assume that the Proposed Development will deliver more hedgerow habitat than will be removed, effectively reducing any losses in the long-term, once new planting has matured after 20-30 years, to Negligible (not significant). The potential positive impacts of providing new hedgerow habitat are considered in the Completed Development section.

Other Linear Features and Wildlife Corridors

11.223 The Horse Chestnut Avenue will be largely retained by the Proposed Development. One of the trees will need to be removed to allow widening of the existing gap along the ridgeway cycle route to allow vehicular traffic. All other trees will be retained. The avenue will therefore continue to function as a wildlife corridor, albeit there will be a fragmentation impact resulting from the widening of the existing gap.

11.224 The white willow trees along the Washpit Brook in the northern part of the site will be retained.

11.225 The swale located parallel to the Washpit Brook in the southern part of the site, constructed as part of Phase of the development, and associated tree planting, will also be retained.

11.226 Works will take place in close proximity to all of the retained hedgerows, and therefore the potential exists for damage to hedgerow habitat by the deposition of dust on vegetation or accidental damage from machinery, arising from construction works in adjacent areas. If unmitigated this would result in an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

Invertebrates

11.227 The most valuable habitats for invertebrates will be retained as part of the Proposed Development. The overall assemblage is considered unlikely to be significantly adversely affected, resulting in a Negligible (not significant) effect.

11.228 There will be some small-scale losses of elm trees used by white-letter hairstreak, but this species of plant is present across the site and it is considered likely that the species will continue to use the site as a result.

11.229 The pile of felled oak trunks will be removed as it is located within development Plot J. This could result in and adverse effect on a Nationally Scarce species of timberworm beetle. If unmitigated this would result in an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

Great Crested Newt

11.230 The Proposed Development will result in no loss of ponds used by GCNs.

11.231 The Proposed Development will affect suitable terrestrial habitat for the species, within approximately 50-250m of Ponds P1, P6, PA1 and PA2 (referred to as 'intermediate terrestrial habitat'). No terrestrial habitat within 50m ('immediate terrestrial habitat') will be affected.

11.232 Works within 50-250m of breeding ponds would normally carry a risk of newts being killed, injured or disturbed during site clearance and construction, which would be an offence under the legislation protecting GCNs. However, Ponds P1, PA1 and PA2 are located outside a line of temporary newt fence, installed under the current Natural England licence. The newts associated with these ponds cannot access suitable terrestrial habitat within the site, with the exception of a narrow strip of land immediately to the west of the Madingley Road Park and Ride, where the newt fence has been set back into the site away from the boundary (see Figure

11.2). This is located within the proposed Amenity Cluster C on Plot K. The illustrative layout shows this area as 'other neutral grassland', outside of the area to be converted to sports pitches.

11.233 Provided that the temporary newt fence located along the southern site boundary, immediately to the north and west of Madingley Road Park and Ride, is retained until the completion of Plot G and Amenity Cluster C (Plot K) there will be no additional loss of suitable terrestrial habitat in this location, and the works can be undertaken with minimal risk to individual newts, through careful supervision of landscaping works within the newt fence. The temporary newt fence can be retained in this location until June 2031 under the current Natural England licence. The current programme for completion of Plot G and Amenity Cluster C is 2029

11.234 Pond P6 is also separated from the site by temporary newt fence installed alongside Eddington Avenue and Garrod Street. However, this temporary fence currently stops at the north-east corner of Cricket Pitch Wood. It therefore does not prevent newts from accessing suitable (intermediate) terrestrial habitat within Plot J. The temporary newt fence was not installed along the entire boundary in this location because the land within Plot J at the time of installation of the fence was not suitable for GCNs; since farming of the site ceased, and this area has been topsoil stripped, the land within Plot J has developed into suitable terrestrial habitat.

11.235 Historically, the majority of GCNs associated with Pond P6 were recorded in an ornamental pond, located 220m from the site boundary. The only other location where GCNs have been recorded in Pond P6 is on the western side of the main pond, approximately 205m from the site boundary. Given these distances and the very low numbers of GCNs likely to still be present in Pond P6, the likelihood of GCNs encountering the site and being impacted through either loss of terrestrial habitat or individual newts being killed or injured is very low. The status of GCNs in Pond P6, and the potential risks to the species, will need to be reviewed as part of the reserved matters application for Plot J. The construction of Plot J is currently scheduled to commence in 2032.

11.236 Based on the assumptions set out above, no significant effect on GCNs are considered likely to occur as a result of the Proposed Development, resulting in a Negligible (not significant) effect.

Common Toad

11.237 The Proposed Development will result in no loss of permanent ponds used by common toads. It is possible that toads have started to use some of the temporary construction site ponds, which will be removed.

11.238 Toads are likely to use terrestrial habitat in the area around Pond P4, the majority of which is outside of the site boundary. Use of the grassland areas within the adjacent plot (Plot H1) is considered unlikely.

11.239 Toads associated with Ponds P1 and P6 are unlikely to encounter the site due to the presence of temporary newt fencing, and the distance between Pond P6 and the site boundaries. However, they may utilise some of the terrestrial habitat within Plot J.

11.240 Toads associated with the lagoon at Brook Leys and Pond P2 may occur within Amenity Cluster C (Plot K), Plots E1, F1 and G, and the grassland and swales which form the Phase 1 wetland habitats. Given the landscaping proposed within the Washpit Brook corridor in the northern part of the site, and the low numbers of toads recorded, there is unlikely to be a noticeable reduction in the amount of terrestrial habitat used by toads.

11.241 Site clearance and construction works within Amenity Cluster C (Plot K), Plots E1, F1, G and J carry a risk of toads being killed or injured. In a worst-case scenario, and if unmitigated, this would give rise to an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

Grass Snake

11.242 Given that grass snakes were not recorded during the surveys and are therefore only likely to be present at low densities, and that they are most likely to utilise the Washpit Brook corridor and Phase 1 wetland habitats that will be retained, a noticeable reduction in suitable habitat for his species is considered unlikely to occur.

11.243 As a wide-ranging species, grass snakes could occur anywhere within the site. Site clearance and construction works carry a risk of grass snakes being killed or injured, which would be an offence under the legislation protecting grass snakes. In a worst-case scenario, and if unmitigated, this would give rise to an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

Barn Owl

11.244 The Proposed Development will result in the loss of a nest site used by a pair of barn owls. The location of the nest is confidential, but is provided in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 12**. Other buildings within the site that could potentially provide an alternative nesting location will be demolished. Barn owls can nest in trees but require a cavity of a specific size. It is therefore likely that barn owls will be lost from the site as a result of the Proposed Development without successful replacement of the nest site. There is therefore likely to be an adverse effect on barn owls at the Local scale, resulting in a Minor Adverse (**significant**) effect.

11.245 The demolition of the building containing the nest site also has the potential to kill or injure the birds or chicks, and destroy the nest and eggs. Other works in the area around the building have the potential to disturb barn owls whilst nesting. These would be offences under the Wildlife and Countryside Act 1981 (as amended) and would need to be avoided through appropriate working practices (as described in the '*Mitigation, Monitoring and Residual Effects*' section).

Skylark

11.246 The Proposed Development will result in the loss of breeding habitat for skylarks from the site, and therefore the loss of 9 pairs. Skylarks nest in grassland habitat, as will be provided as part of the landscape design for the scheme, but prefer large open fields and are therefore considered unlikely to continue to nest within the site in the long-term. There is therefore likely to be a significant adverse effect on breeding skylarks at the Local scale, resulting in a Minor Adverse (**significant**) effect.

11.247 Topsoil stripping of the fields in the western part of the site has the potential to kill or injure the birds or chicks, and destroy the nest and eggs. This would be an offence under the Wildlife and Countryside Act 1981 (as amended), and would need to be avoided through appropriate working practices (as described in the '*Mitigation, Monitoring and Residual Effects*' section).

11.248 The site is not of particular importance for wintering skylark and this species may still use the site on occasion. No impact on wintering skylarks is therefore predicted.

Whitethroat

11.249 The Proposed Development will result in the temporary loss of breeding habitat for whitethroat from the western part of the site during the earthworks for Phases 2 and 3.

11.250 The illustrative landscape design for this part of the site shows the planting of hedgerows and extensive patches of scrub, which provide breeding habitat for whitethroat. Although this is illustrative in terms of design, with details to be confirmed at the Reserved Matters Application (RMA) stage, it is reasonable to assume that hedgerows and scrub will be provided within the area if open space in the western part of the site. As a result it is considered likely that whitethroat would continue to breed on site in the long-term, in similar numbers to that recorded during the baseline surveys. There is, however, likely to be a reduction in the short-term (approximately 5-10 years) from the commencement of Phase 2, to allow for the earthworks to be completed and any new habitats created to become established. This would constitute an adverse effect on breeding whitethroats at the Local scale, resulting in a Minor Adverse (**significant**) effect in the short-term (approximately 5-10 years).

11.251 Any tree felling, or hedgerow or scrub removal has the potential to kill or injure the birds or chicks, and destroy the nest and eggs. This would an offence under the Wildlife and Countryside Act 1981 (as amended) and would need to be avoided through appropriate working practices (as described in the '*Mitigation, Monitoring and Residual Effects*' section).

11.252 Whitethroats are a summer visitor and therefore no impact on wintering whitethroats is predicted.

Linnet

11.253 The Proposed Development is likely to result in a permanent reduction in the size of the site's population of breeding linnets. The illustrative landscape design for the western part of the site shows the planting of hedgerows and extensive patches of scrub, which will provide nesting habitat. However, it is likely that there will be a significant reduction in the coverage of seed-bearing plants that provide a food source for linnets. Linnets are likely to continue to use the site in the long-term during the breeding season but in much reduced numbers (the actual reduction in terms of numbers of pairs is impossible to predict, but could be up to nine pairs). This would constitute an adverse effect on breeding linnet at the Local scale, resulting in a Minor Adverse (**significant**) effect.

11.254 Any tree felling, or hedgerow or scrub removal has the potential to kill or injure the birds or chicks, and destroy the nest and eggs. This would be an offence under the Wildlife and Countryside At 1981 (as amended) and would need to be avoided through appropriate working practices (as described in the '*Mitigation, Monitoring and Residual Effects*' section) .

11.255 The site does not appear to be of particular importance for linnets during the winter, and so there is unlikely to be a noticeable change in usage of the site by this species.

Woodcock

11.256 The Proposed Development will retain the areas identified as daytime roost sites for woodcock by the 2024/25 surveys. However, the grassland field to the east of Pheasant Plantation within which woodcock were recorded feeding at night, will be converted to allotments and surfaced sports pitches, and will therefore no longer provide suitable habitat for this species. Whilst woodcock may still occur within the site boundaries in the long-term, there is likely to be a reduction in the numbers present.

11.257 In the absence of effective mitigation, this would constitute an adverse effect on wintering woodcock at the Local scale, resulting in a Minor Adverse (**significant**) effect.

11.258 The areas of grassland to the north of Pheasant Plantation were not found to be used by woodcock, but these could be managed to provide similar habitat to the field currently used for foraging to mitigate for the loss of habitat.

Barbastelle Bats

11.259 No barbastelle bat roosts will be affected by the Proposed Development given their likely distance from the site.

11.260 In general, the preferred foraging habitat of barbastelle bats is along riparian corridors, treelines, hedgerows and woodlands[Error! Bookmark not defined.]. The survey results from the site support this, with the Washpit Brook being found to be disproportionately important as a commuting route and/or a foraging habitat in the context of the habitats present within the site. Other parts of the site were found to be used relatively infrequently by barbastelle bats.

11.261 Given that the Washpit Brook and the riparian zone will be retained, that the three woodlands in the site will be retained, and that the majority of hedgerows and treelines will be retained and any losses will be compensated with new planting, a significant loss of foraging habitat is not predicted to occur.

11.262 The hedgerows and treelines due to be removed to allow construction of the Proposed Development are not in locations likely to be important as commuting routes with the exception of hedgerow H8, which links the Washpit Brook with trees on Huntingdon Road and Girton College beyond it. Hedgerow H8 will be removed but Hedgerow H6 links the same parts of the site and is also used by barbastelle bats, thereby providing an alternative corridor to Hedgerow H8; this hedgerow will be largely retained. The removal of a short section of Hedgerow H6 is unlikely to create a gap large enough to prevent barbastelle bats from moving along it.

11.263 As a result, no significant effects on barbastelle bats are predicted, resulting in a Negligible (not significant) effect.

Brown Long-Eared Bats

11.264 The Proposed Development will result in the removal of a small irregularly used brown long-eared bat roost at Gravel Hill Farm. The demolition of the farmhouse has the potential to result in individual bats being killed or injured if unmitigated. This would be an offence under the Conservation of Habitats and Species Regulations 2017 (as amended), unless carried out under the appropriate Natural England licence.

11.265 Brown long-eared bat activity within the site appears to be highest at Cricket Pitch Wood and Pheasant Plantation, possibly indicating the presence of a roost in one or both of these woodlands. This species also prefers foraging in woodland habitats[Error! Bookmark not defined.] . Given the retention of the site's woodlands and the majority of its treelines and hedgerows a significant loss of foraging habitat for this species is considered unlikely to occur. The retention of a commuting route across the site for barbastelle bats is also likely to allow brown long-eared bats to move across the site.

11.266 Given the loss of a roost, albeit a small and irregularly used one, an adverse effect on brown long-eared bats at the Local scale, resulting in a Minor Adverse (**significant**) effect is predicted.

Noctule Bats

11.267 No noctule bat roosts will be affected by the Proposed Development, as any roosts present are likely to be within the retained woodlands.

11.268 Noctule bats prefer to forage within or over broadleaved woodland or pasture and with an affinity to water[Error! Bookmark not defined.]. They are therefore likely to use the woodland and wetland habitats on site primarily, which will be retained by the Proposed Development. Noctule bats are also likely to forage in the fields within Plot A (Phase 3) and over some of the former farmland that has developed into grassland in Phases 2, 3 and 4. However, the results from the field surveys do not indicate a particularly high level of use of these areas. In addition, the construction of the Proposed Development will occur in phases, as described in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**.

11.269 The sitewide cut and fill operation will affect the grassland that has developed on spoil mounds within Phases 2A, 2B, 2C and much of Phase 3 (the exception being the grazed fields within Plot A which will not be affected at this stage). Landscaping of the open space to the west of the Washpit Brook will have been completed before works commence in Plot A (Phase 3), and will therefore provide foraging habitat for noctule bats. Phases 2A and 2B are due to be complete before Phase 4 commences, and therefore a proportion of the open space between the development plots in these phases and the Washpit Brook will also be complete and providing foraging habitat for noctule bats.

11.270 Noctule bats fly readily across open areas and were regularly recorded foraging along the swale between Kendrew Place and Eddington Avenue. It is therefore unlikely that the Proposed Development would prevent noctule bats from commuting between roosts and foraging areas.

11.271 Overall, the Proposed Development may result in the loss of a relatively small proportion of the foraging habitat used by noctule bats but given the phased nature of the development, with landscaped areas of open space providing alternative foraging habitat, the losses experienced by noctule bats at any given time are considered to be not significant, resulting in a Negligible (not significant) effect.

Water Vole

11.272 The majority of the locations where water voles have been recorded on site will be retained as part of the Proposed Development. The exceptions to this are:

- The lagoon at Brook Leys where a drainage discharge into the lagoon will need to be constructed to take runoff from proposed new attenuation features to the north. This will result in a negligible amount of habitat loss – generally less than a 5m length of bank would be affected, which represents approximately 5% of the typical territory size of a water vole; and
- Four temporary construction site ponds – TP1, TP2, TP3 and TP4, which will be in-filled as part of the Proposed Development. The ponds are choked with vegetation and water voles are therefore using the full area of the pond, as reedbed type habitat, rather than being restricted to the pond edge. The quantity of habitat lost is therefore the area of the four ponds combined, which equates to approximately 4,000m^2. Water voles use the ponds when they are wet but are likely to move into the adjacent swales and nearby lagoon when they dry out during the summer months. The number of water voles present is difficult to calculate because of the way that they are using the habitat, but it is likely to be 4 or 5 animals, at most (total across all four ponds).

11.273 The Proposed Development will therefore result in an overall reduction in the amount of habitat available to water voles, although this is primarily associated with temporary ponds that would be removed when the haul road and car park associated with the Madingley Road construction site access is removed, and would therefore likely be lost irrespective of whether the Proposed Development is consented or not. It is therefore not considered to represent a significant effect on water voles.

11.274 The removal of the ponds and the construction of a drainage discharge into the lagoon carry a risk of water voles being killed or injured during construction, which would be an offence under the Wildlife and Countryside Act 1981 (as amended) and could threaten the overall population within the site. If unmitigated this would result in an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

Otter

11.275 The Proposed Development will not result in any habitat loss for otters. The small-scale works described above that could impact water voles will have no noticeable impact on otters, given the large range of this species and that there are no known resting sites within the site boundaries.

11.276 The construction works are also unlikely to result in disturbance of otters, given that this species is nocturnal and given the absence of known resting sites.

11.277 Therefore a Negligible (not significant) effect on otters is predicted.

Badger

11.278 The majority of the badger setts within the site will be retained, including all main and annexe setts. Five setts will be removed (the locations of the setts are confidential, but are provided in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 15**):

- Sett E1, a subsidiary sett;
- Sett E2, likely to function with E1 as a subsidiary sett;
- Sett U, an outlying sett;
- Sett V, an outlying sett; and
- Sett M, an outlying sett.

11.279 The resident social groups of badgers on site have alternative setts that they can use; the loss of subsidiary or outlying setts is unlikely to cause a noticeable impact on the resident social groups as these are not always occupied and badgers are capable of excavating replacement setts quickly, provided that the main and annexe setts (those with breeding function and, in the case of main setts, permanently occupied by badgers) are retained.

11.280 The removal of the setts carries a risk of individual animals being killed or injured during site clearance and construction, and would be an offence under the Protection of Badgers Act 1992.

11.281 The Proposed Development will result in a reduction in the amount of habitat available for foraging badgers in the short-term, although this will be reduced in the long-term due to the provision of large areas of public open space that will provide foraging habitat. The social groups of badgers present are likely to adapt over time, exploiting new foraging resources. There may be a reduction in the numbers of badgers within the two social groups using the site, but it is likely that two social groups will remain on site.

11.282 A Negligible (not significant) effect on badgers is predicted but mitigation is required in any case to ensure compliance with the legislation protecting badgers, as described in the *'Mitigation, Monitoring and Residual Effects'* section of this ES chapter.

Brown Hare

11.283 The site's brown hare population is likely to decline as works progress in the western part of the site until eventually the species is lost from the site completely. The habitats that will be present on site in the long-term are unlikely to support brown hares. Topsoil stripping in the western part of the site carries a risk of individual animals being killed or injured during site clearance and construction.

11.284 There is therefore likely to be an adverse effect on brown hares at the Local scale, resulting in a Minor Adverse (**significant**) effect.

Hedgehog

11.285 Given the low numbers of animals likely to be present, and that the more valuable habitats for hedgehogs will be retained, a noticeable loss of habitat for hedgehogs is considered unlikely to occur. All site clearance works carry a risk of individual animals being killed or injured, but the risk is very low for the same reasons as described above.

11.286 Therefore, a Negligible (not significant) effect on hedgehogs is predicted.

Completed Development

Ascension Parish Burial Ground City Wildlife Site

11.287 The CiWS could be impacted if residents of the new properties within the Proposed Development deposit litter or garden waste over the boundary onto the CiWS. The illustrative layout for the Proposed Development shows an area of open space along the site's eastern boundary, with no residential properties backing onto the boundary. The area of open space would be managed by the University of Cambridge and therefore an adverse impact on the CiWS is unlikely to occur. However, this is dependent on the detailed layout of Plots H2 and H3 which will not be determined until the RMA stage. If unmitigated this would result in an adverse effect at the County scale, resulting in a Moderate Adverse (**significant**) effect.

11.288 Given the nature of the CiWS and lack of direct access to it from the Proposed Development, increased recreational use of the CiWS is considered unlikely to occur.

Bird Sanctuary, Conduit Head City Wildlife Site

11.289 The Flood Risk Assessment and Surface Water Drainage Strategy for the Proposed Development (Document Reference NWC-MP2024-ACM-SW-RP-00019) states that all surface water will be drained into the Washpit Brook, which is located downstream of the CiWS. There is therefore no potential for water borne pollution to impact the CiWS and therefore no effect is likely to occur.

11.290 Given the nature of the CiWS and lack of direct access to it from the Proposed Development, increased recreational use of the CiWS is considered unlikely to occur.

Scrub East of M11 Verge City Wildlife Site

11.291 The Proposed Development could result in increased numbers of people using the public bridleway that provides access to the CiWS. However, the habitats for which the CiWS is designated (established scrub and hedgerow) are not likely to be affected by increased levels of use, therefore no significant effect is likely to occur, resulting in a Negligible (not significant) effect.

Veteran Oak Tree

11.292 Dependent on the final height and layout of the new he buildings on the adjacent plot (Plot F2) the Proposed Development could result in changes to the wind patterns that the Veteran Oak Tree experiences. There may also be long-term changes in terms of the hydrology in this specific part of the site. These impacts are likely to have already occurred to a certain extent given that Phase 1 has been constructed. However, the construction of Plot F2 (Phase 2A) could have additional impacts. In the absence of effective mitigation these impacts could give rise to an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

11.293 Given that the Veteran Oak Tree is currently located within an area of public open space that is managed by the University of Cambridge to discourage public access, and that the Proposed Development will not materially change this, no additional impacts during the Completed Development phase are anticipated.

Washpit Brook

11.294 As set out in the Flood Risk Assessment and Surface Water Drainage Strategy for the Proposed Development, the drainage design will incorporate appropriate measures to attenuate flows into the brook and to minimise the risk of pollution.

11.295 The Proposed Development will result in increased recreational pressure on the retained habitats within the site. This is only likely to affect the Washpit Brook in two locations:

- The play area within Amenity Cluster C (Plot K); and
- The length of the brook adjacent to Plots B3, C1 and D1.

11.296 Public access routes will be formalised in these locations to minimise the potential impacts and access will be discouraged from other parts of the brook.

11.297 Given the nature of the Washpit Brook in these parts of the site, no direct damage to the brook or the vegetation associated with it is likely to occur. However, the potential exists for increased littering.

11.298 A number of watercourse enhancement measures have been proposed to allow the Proposed Development to achieve at least a 10% BNG in terms of watercourse units (see **BNG Assessment submitted to support this OPA**). The delivery of such measures, or equivalent ones that allow the minimum 10% gain to be achieved, will be secured through a planning condition.

11.299 It is therefore reasonable to assume that the Proposed Development will have a positive impact on the Washpit Brook, assuming the implementation of mitigation measures to address potential adverse impacts, therefore resulting in a beneficial effect at the Local scale, or Minor Beneficial (**significant**) effect.

Lagoon at Brook Leys and Other Phase 1 Wetland Habitats

11.300 As set out in the Flood Risk Assessment and Surface Water Drainage Strategy for the Proposed Development, the drainage design will incorporate appropriate measures to attenuate flows into the lagoon and to minimise the risk of pollution.

11.301 There is already a relatively high level of public use of Brook Leys. Whilst visitor numbers may increase, this is unlikely to result in a noticeable impact, assuming that the current management regime continues.

11.302 Formal public access will not be provided to the other Phase 1 wetland habitats other than the lagoon. Whilst these areas will be accessible to the public, high levels of recreational use are not expected, and therefore impacts such as increased littering are considered unlikely to occur.

11.303 Therefore a Negligible (not significant) effect is likely to occur.

Ponds

11.304 The Flood Risk Assessment and Surface Water Drainage Strategy for the Proposed Development states that all surface water will be drained into the Washpit Brook. As a result, there is no risk of pollution of on site and off-site ponds and therefore no effect is likely to occur.

Woodlands

11.305 There is no intention to facilitate public access into any of the woodlands on site and measures are currently in place to actively discourage public access. This has included the installation of chestnut paling along the woodland edges that are in public areas and the maintenance of bramble scrub in the same locations.

11.306 The Proposed Development will result in additional edges of the woodlands being in public areas, increasing the likelihood of public access. Public access to the woodland could result in damage to trees through vandalism and also change the requirements for management of trees, potentially resulting in deterioration of the habitat. There is no valuable ground flora in any of the woodlands at present that would be at risk of trampling. Nevertheless, in the absence of effective mitigation this could give rise to an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

11.307 Enhancement measures have been proposed to allow the Proposed Development to achieve at least a 10% Biodiversity Net Gain in terms of habitat units (see **BNG Assessment submitted to support this OPA**). This includes the improvement of the condition of the woodland in the eastern part of the site, adjacent to Plot H3 and Plot J. The delivery of such measures, or equivalent ones that allow the minimum 10% gain to be achieved, will be secured through a planning condition. It is therefore likely that the Proposed Development will have a positive impact on woodland habitat, assuming the implementation of mitigation measures to address potential adverse impacts.

11.308 It is therefore reasonable to assume that the Proposed Development will have a positive impact on woodlands, assuming the implementation of mitigation measures to address potential adverse impacts, resulting in a beneficial effect at the Local scale, or Minor Beneficial (**significant**) effect.

Hedgerows

11.309 All of the existing hedgerows will be located within areas of public open space and therefore their retention and long-term beneficial management can be secured. It is assumed that no additional adverse impacts on retained hedgerows would occur as a result of the completed development.

11.310 The illustrative landscaping scheme for the Proposed Development shows the provision of new hedgerow habitat, a large proportion of which is located in areas of open space and well-linked to other hedgerow, woodland or scrub habitat. Based on the illustrative landscape design, the BNG calculation has assumed that 2.69km of native species-rich hedgerow would be planted (see **BNG Assessment submitted to support this OPA**). The amount of new hedgerow to be planted is subject to change as details will be confirmed at the RMA stage. However, there would have to be sufficient new hedgerow planted for the Proposed Development to achieve at least a 10% BNG in terms of hedgerow units; this is likely to be secured by a planning condition. It is therefore reasonable to assume that the Proposed Development will deliver an overall increase in hedgerow habitat in the long-term.

11.311 Therefore, the overall effect on hedgerows is assessed as beneficial at the Local scale, resulting in a Minor Beneficial (**significant**) effect.

Other Linear Features and Wildlife Corridors

11.312 All of the other linear features will be located within areas of public open space and therefore their retention and long-term beneficial management can be secured. It is assumed that no additional adverse impacts on such features would occur as a result of the completed Proposed Development. Therefore, a Negligible (not significant) effect is likely.

Invertebrates

11.313 No additional adverse impacts on invertebrates associated with the completed Proposed Development are predicted. The new habitats proposed as part of the illustrative landscape design would provide additional habitat for a range of species. However, this cannot be guaranteed as the design is illustrative and therefore a beneficial effect cannot be relied upon. As a result it is assumed that the Proposed Development would have a Negligible (not significant) effect.

Great Crested Newts

11.314 No additional adverse impacts on great crested newts associated with the completed Proposed Development are predicted. New ponds are proposed as part of the illustrative landscape design, which would provide additional breeding habitat; new terrestrial habitat is also likely to be created. However, this cannot be guaranteed as the design is illustrative and therefore a beneficial effect cannot be relied upon. As a result it is assumed that the Proposed Development would have a Negligible (not significant) effect.

Common Toad

11.315 No additional adverse impacts on common toads associated with the completed Proposed Development are predicted. New ponds are proposed as part of the illustrative landscape design, which would provide additional breeding habitat; new terrestrial habitat is also likely to be created. However, this cannot be guaranteed as the design is illustrative and therefore a beneficial effect cannot be relied upon. As a result it is assumed that the Proposed Development would have a Negligible (not significant) effect.

Grass Snake

11.316 No additional adverse impacts on grass snakes associated with the completed Proposed Development are predicted. Any beneficial effects of the illustrative landscape design for amphibians (see great crested newt and common toad above) would also benefit grass snake, as this species eats frogs and will utilise similar terrestrial habitats to amphibians. Given that a beneficial effect cannot be guaranteed as the design is illustrative it is assumed that the Proposed Development would have a Negligible (not significant) effect..

Barn Owl

11.317 No additional impacts on barn owls associated with the completed Proposed Development are predicted, provided that the proposed new barn owl nest boxes (see '*Mitigation, Monitoring and Residual Effects*' section) are installed in locations with low levels of public use. Therefore, no significant effect is likely to occur, resulting in a Negligible (not significant) effect.

Skylark

11.318 No additional impacts on skylarks associated with the completed Proposed Development are predicted given that this species is likely to be lost from the site as a result of construction. Therefore no effect is likely to occur.

Whitethroat

11.319 No additional impacts on whitethroats associated with the completed Proposed Development are predicted. There may be beneficial effects associated with the illustrative landscape design through the provision of additional hedgerow and scrub habitat. However the provision of scrub, and the location of hedgerows in areas where they will be used by whitethroat, cannot be guaranteed at this stage. It is therefore assumed that the Proposed Development would result in a Negligible (not significant) effect.

Linnet

11.320 No additional impacts on linnets associated with the completed Proposed Development are predicted given that the construction phase assessment has assumed that this species would no longer breed within the site. Therefore no significant effect is likely to occur, resulting in a Negligible (not significant) effect.

Woodcock

11.321 Given that public access to woodlands and the area of grassland to the north of Pheasant Plantation will be discouraged through fencing of woodlands and the lack of provision of paths through the grassland (which is wet and boggy during winter), no additional adverse impacts on woodcock associated with the completed Proposed Development are predicted. Therefore no significant effect is likely to occur, resulting in a Negligible (not significant) effect.

Barbastelle Bats

11.322 Barbastelle bats are relatively light adverse and their foraging and commuting behaviour can be negatively affected by artificial lighting[Error! Bookmark not defined.]. The dark corridor that will be maintained across the site, as described in paragraphs 11.180 to 11.181, will incorporate and link the most valuable habitats for barbastelle bat. As a result it is considered unlikely that the completed Proposed Development will result in any change in use of the site by this species across the majority of the areas where they have been recorded.

11.323 Lighting is proposed along the northern half of the pedestrian/cycle route that is located immediately adjacent to Hedgerow H6. This is likely to be an important corridor for the movement of barbastelle bats between the Washpit Brook and Girton College. Low level bollard lighting is proposed to minimise the impact on light averse bat species, but as the lighting design is illustrative this cannot be secured at this stage and an adverse effect is therefore assumed as a worst-case scenario.

11.324 The illustrative masterplan for Plot J shows the proposed buildings set back from the edge of Storey's Way Wood. This will minimise light spill from buildings onto the woodland edge. However, as this is an illustrative part of the design it cannot be secured at this stage and an adverse effect is therefore assumed as a worst-case scenario. Lighting is proposed along the northern edge of Storey's Way Wood and will affect either side of the Horse Chestnut Avenue, which may reduce activity levels by barbastelle bats. However, activity levels in the eastern part of the site by this species are very low.

11.325 As a worst-case scenario, the impact of lighting is assessed as adverse at the Local scale, resulting in a Minor Adverse (**significant**) effect.

Brown Long-Eared Bats

11.326 Brown long-eared bats are also relatively light adverse and their foraging and commuting behaviour can be negatively affected by artificial lighting, as can their use of roost sites[Error! Bookmark not defined.]. The dark corridor described in paragraphs 11.180 to 11.181, and the avoidance of light spill onto woodlands that may support roosts, will also minimise effects on brown long-eared bats.

11.327 As for barbastelle bats, the detailed design of Plot J may result in adverse effects on brown long-eared bats foraging along the edge of Storey's Way Wood and commuting across the site to the Horse Chestnut Avenue.

11.328 Therefore, as a worst-case scenario, the impact of lighting is assessed as adverse at the Local scale resulting in a Minor Adverse (**significant**) effect.

Noctule Bats

11.329 Noctule bats are not particularly light averse, unless the light spills onto roost sites[Error! Bookmark not defined.]. Commuting behaviour is unaffected by light and there appear to be both positive and negative effects of lighting on foraging behaviour. Given that the woodlands will not be directly lit, with the exception of bollard lighting along the cycleway at Storey's Way Wood and some very limited indirect light spill onto the eastern tip of Pheasant Plantation (see paragraphs 11.180 to 11.181), no significant effect on noctule bats is predicted, resulting in a Negligible (not significant) effect.

Water Vole

11.330 No additional impacts on water voles associated with the completed Proposed Development are predicted, assuming that management of wetland habitat continues in a manner which is sensitive to, and beneficial for, water voles. Therefore, a Negligible (not significant) effect is likely to occur.

Otter

11.331 The Proposed Development will result in increased recreational use of the land in the northern part of the site, either side of the Washpit Brook, and around the lagoon at Brook Leys. Use of these areas by otters is currently considered likely to be low, with no known resting sites present and a change in the use of the site by otters is not predicted. As a result, a Negligible (not significant) effect is predicted.

Badger

11.332 Given the locations of the retained setts on site, in areas where access by the public is discouraged or would be limited, a disturbance effect is considered unlikely to occur.

11.333 There will be an increase in vehicular traffic across the site, and therefore the potential for badgers to be killed through road-related mortality. Given the likely low traffic speeds the risk of badgers being killed is considered to be relatively low. As a result, a Negligible (not significant) effect is predicted.

Brown Hare

11.334 Brown hares are unlikely to persist on site following the completion of construction. Therefore no additional impacts on brown hares associated with the completed Proposed Development phase are predicted. As a result, a Negligible (not significant) effect is predicted.

Hedgehog

11.335 There will be an increase in vehicular traffic across the site, and therefore the potential for hedgehogs to be killed through road-related mortality. However, use of the site by hedgehogs is currently likely to be low, particularly in parts of the site that would be fragmented from open space by roads. As a result, a Negligible (not significant) effect is predicted.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Enabling, Demolition and Construction Mitigation

11.336 All potential enabling and construction works effects, in terms of their scale and nature, will remain as discussed above under '*Potential Effects*', with the exception of the following effects which have been identified to require mitigation.

Ascension Parish Burial Ground City Wildlife Site

11.337 Measures to reduce dust during construction are included in the Outline Construction Environmental Management Plan (CEMP) (Document Reference NWC-MP2024-TTD-SW-RP-00301-P01), and therefore a Negligible (not significant) residual effect.

Bird Sanctuary, Conduit Head City Wildlife Site

11.338 Measures to prevent water borne pollution during construction will be included in the CEMP, and therefore no significant residual effect is anticipated, resulting in a Negligible (not significant) effect.

Veteran Oak Tree

11.339 Measures to reduce dust during construction are included in the CEMP, and therefore no significant residual effect is anticipated, resulting in a Negligible (not significant) effect.

Washpit Brook

11.340 The temporary crossing of the brook required in the northern part of the site to allow access across it during the sitewide cut and fill operation will need to be sited to minimise impacts on the brook and its vegetation. It will be installed on the same alignment as the flow control structure to ensure no additional trees need to be removed. It will be a clear span structure to avoid in-channel impacts. These details will need to be included within the CEMP, and their implementation can then be secured through an appropriately worded planning condition.

11.341 The play area in Amenity Cluster C will be designed so that the parts of the play area located within 10m of the brook comprise soft rather than hard landscaping, to avoid further encroachment of the riparian zone. This will be effectively secured by a planning condition relating to BNG, as the requirement to achieve at least a 10% gain will ensure that the detailed design avoids any further encroachment into the riparian zone.

11.342 Measures to prevent water borne pollution during construction will be included in the CEMP.

11.343 As a result no significant effect is predicted, resulting in a Negligible (not significant) effect.

Lagoon at Brook Leys and Other Phase 1 Wetland Habitats

11.344 Measures to prevent water borne pollution during construction will be included in the CEMP. As a result no significant effect is predicted, resulting in a Negligible (not significant) effect.

Ponds

11.345 Measures to prevent water borne pollution during construction will be included in the CEMP. As a result no significant effect is predicted, resulting in a Negligible (not significant) effect.

Woodlands

11.346 Measures to reduce dust during construction will be included in the CEMP. The appropriate design and layout of tree protection fencing will be detailed in a Tree Protection Plan at the RMA stage for each development plot.

11.347 As a result no significant effect is predicted, resulting in a Negligible (not significant) effect.

Hedgerows

11.348 There will be no overall reduction in hedgerow habitat despite the losses due to the requirement to deliver a 10% BNG in relation to hedgerow units. The planting of new hedgerow habitat is therefore considered to be a positive impact rather than compensation for a negative impact.

11.349 It is not possible to mitigate for the fragmentation impact of one of the retained hedgerows. However, this is not considered to give rise to a significant effect on hedgerows, given the relatively small size of the gap being created and that the hedgerow is already fragmented at its northern end by Huntingdon Road.

11.350 Measures to reduce dust during construction will be included in the Construction Environmental Management Plan (CEMP). The appropriate design and layout of tree protection fencing will be detailed in a Tree Protection Plan at the reserved matters stage for each development plot.

11.351 As a result no significant effect is predicted, resulting in a Negligible (not significant) effect.

Other Linear Features and Wildlife Corridors

11.352 Measures to reduce dust during construction are included in the CEMP. The appropriate design and layout of tree protection fencing will be detailed in a Tree Protection Plan at the RMA stage for each development plot.

11.353 As a result no significant effect is predicted, resulting in a Negligible (not significant) effect.

Invertebrates

11.354 A disease-resistant cultivar of elm was planted within Phase 1 and will also be included within the mix of trees to be planted as part of the landscape design for the Proposed Development. The inclusion of elm in planting mixes for areas of open space is specified in the Ecological Enhancement Plan.

11.355 A proportion of the felled oak trees in the log pile in Plot J will be moved to a suitable area of retained habitat within the plot, to ensure that the Nationally Scarce species of timberworm beetle using the log pile is retained on site. This is also specified as a requirement in the Ecological Enhancement Plan

11.356 As a result no significant effect on any invertebrates are predicted, resulting in a Negligible (not significant) effect.

Great Crested Newt

11.357 The temporary newt fence separating Pond P1 in the Madingley Road Park and Ride from Amenity Cluster C (Plot K) needs to be retained and maintained in good condition until the sports provision in Amenity Cluster C and the adjacent Plot G have been constructed. This is a condition of the Natural England licence and is therefore already secured.

11.358 Landscaping works within the narrow strip of land along the eastern edge of Amenity Cluster C will need to be carried out under ecological supervision and any newts present captured and relocated appropriately. This will need to be agreed with Natural England through a modification of the current licence. It is therefore already secured due to the legal requirement to comply with the licence conditions or modify the licence accordingly.

11.359 At this stage it is considered unlikely that GCNs encounter any other parts of the site. However, GCNs associated with Pond 6 may start to utilise the land within Plot J if there is a significant increase in the numbers of newts breeding within the pond. Monitoring of the numbers of GCNs within Pond 6 is a condition of the Natural England licence, with surveys programmed for 2028 and 2031; monitoring is therefore already secured.

11.360 The results of the monitoring will need to be reviewed as part of the Reserved Matters Application for Plot J, along with an up-to-date assessment of the suitability of the terrestrial habitat within Plot J, to determine whether any specific mitigation measures are required. Any such works, if necessary, would need to take place under a new Natural England mitigation licence or a modified version of the existing licence.

11.361 As a result, a Negligible (not significant) effect is predicted.

Common Toad

11.362 Site clearance and construction works within Amenity Cluster C, and Plots E1, F1, G and J will need to be overseen by an ecologist, with searches made of terrestrial habitat for toads prior to works commencing. Any toads found would need to be relocated to suitable retained habitat. Further details will be included in the CEMP. As a result no significant effect is predicted, resulting in Negligible (not significant) effect.

Grass Snake

11.363 Site clearance and construction works within all parts of the site will need to be overseen by an ecologist, with searches made for grass snakes prior to works commencing. Any grass snakes found would need to be relocated to suitable retained habitat. Further details will be included in the CEMP. As a result, a Negligible (not significant) effect is predicted.

Barn Owl

11.364 At least two barn owl boxes will be installed within areas of extensive grassland habitat, to be provided in the western part of the site. Further details are set out in the Ecological Enhancement Plan submitted as part of this OPA. This is compensation, as opposed to mitigation, for the loss of a nest site. Use of the boxes by barn owls cannot be guaranteed, although other bird species may also use them. An adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect is therefore predicted.

11.365 Demolition of the building containing the nest and construction works in the vicinity of it, must be undertaken outside of the nesting period. There is significant variation in the nesting season of barn owls, which can commence as early in the year as January and continue into October or November. Demolition in the December prior to works commencing is recommended to ensure compliance with the legal protection afforded to barn owls. Alternatively, it may be possible to identify a prolonged period of disuse through appropriate monitoring (note that monitoring of the nest site may also need to take place under a Natural England licence).

Skylark

11.366 It is not possible to mitigate for the loss of breeding habitat for skylarks, although compensation can be delivered through the provision of measures in off-site areas of farmland to make them more valuable for skylarks. For Phase 1 of the 2013 OPP, the Applicant made a financial contribution through the Section 106 (S106) agreement to cover such off-site measures. These were delivered by Cambridge Past Present and Future on their farmland at Coton Countryside Reserve, starting in 2020, for a period of 15 years. The financial contribution was calculated on the basis of compensating for the loss of up to 12 pairs of skylark. These off-site compensation measures will continue until 2035. They have already been in place for five years, but there has been a much lower reduction in skylark use of the site than predicted, as the western part of the site has remained undeveloped.

11.367 Topsoil stripping in the western part of the site will need to be undertaken in a manner that minimises the risk of damaging a skylark nest. This will include:

- Commencing works in late summer / autumn, after the end of the nesting period, wherever feasible;
- Where topsoil stripping needs to commence in spring or summer, the areas to be stripped will be surveyed in advance to confirm the absence of nests; any nests will be cordoned off and protected until the nest is no longer in use.

11.368 These measures will be included in the CEMP.

11.369 Although the compensation for skylarks has already been secured and partly delivered, the effect is still assessed as an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

Whitethroat

11.370 Tree felling, hedgerow and scrub clearance will need to be undertaken in a manner that minimises the risk of damaging any bird's nest. This will include:

- Undertaking such works between 1 September and 28 February inclusive, wherever feasible, to avoid the nesting season;
- Where the works need to be undertaken during the nesting season (i.e. 1 March to 31 August inclusive), vegetation will be surveyed by an ecologist in advance to confirm the absence of nests; any nests will be cordoned off and protected until the nest is no longer in use.

11.371 These measures will be included in the CEMP. As a result, a Negligible (not significant) effect is predicted.

Linnet

11.372 It is not possible to mitigate for the loss of breeding habitat for linnets, although the off-site measures implemented at Coton Countryside Reserve as compensation for skylarks will also provide compensatory habitat for linnets.

11.373 Tree felling, hedgerow and scrub clearance will need to be undertaken in a manner that minimises the risk of damaging any bird's nest, as set out for whitethroat above. These measures will be included in the CEMP.

11.374 Although compensation for linnets has already been secured and partly delivered, the effect is still assessed as an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

Woodcock

11.375 The area of grassland to the north of Pheasant Plantation will be managed to provide suitable foraging habitat for woodcock. Further details will be provided in the Ecological Enhancement Plan. As a result, a Negligible (not significant) effect is predicted.

Brown Long-Eared Bats

11.376 It is not possible to mitigate the loss of a roost. A Natural England licence will be required for the demolition of the farmhouse at Gravel Hill Farm. Works will need to take place when bats are absent, if possible, and under the supervision of a licensed ecologist. Given the low levels of use of the roost by a common species, and that it is not used as a maternity or hibernation roost, provision of a replacement roost will not be required under the licence. However, bat boxes will be provided in new buildings (see Ecological Enhancement Plan) and have already been installed in the retained woodlands, effectively delivering compensation for the loss of the roost. The residual effect on brown long-eared bats will therefore remain as an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect.

Noctule Bats

11.377 It is not possible to mitigate the loss of foraging habitat during construction, but this is a short-term, temporary impact, which will be reversed through landscape planting in areas of open space on a phased basis and is therefore considered to be Negligible (not significant).

Water Vole

11.378 Water voles will need to be relocated from the four temporary construction site ponds prior to them being in-filled. They will also need to be relocated from the footprint of the works to construct a drainage discharge into the lagoon at Brook Leys. This will most likely be achieved by displacement, which involves the manipulation of the habitat by vegetation strimming and de-watering (in the case of the ponds) to encourage the animals to relocate to alternative nearby habitat. The works would need to take place under a Natural England licence, and there are seasonal restrictions on when such an operation can take place (currently 15 February to 15 April or 15 September to 31 October). The mitigation is therefore secured in this case, by virtue of the legal protection afforded to water voles and the requirement for a licence. Further details will be included in the CEMP.

11.379 The illustrative landscape design shows the provision of two new ponds:

- A pond adjacent to the allotments and play area in Amenity Cluster C; and
- A pond within one of the attenuation basins in the western part of the site – whilst the attenuation basins would generally be dry, a permanent pond is proposed in one part of a basin, to be created by over-deepening the basin and setting the level of outflow accordingly.

11.380 This will result in an increase in the amount of permanent habitat available to water voles, assuming that they are designed to provide valuable habitat for this species (approximately 735m^2 in total). Whilst this is a smaller area than the total area of temporary ponds to be removed, it represents an increase in comparison with the 'future baseline' scenario of the Proposed Development not progressing and the temporary haul road and car park, and associated features, being removed. Although the landscape design is illustrative and therefore not secured, the provision of replacement habitat for water voles will be a requirement of the Natural England licence and is therefore effectively guaranteed.

11.381 There will be a temporary reduction in the amount of habitat available to water voles in the short-term (2-3 years) which is assessed as an adverse effect at the Local scale, resulting in a Minor Adverse (**significant**) effect. In the long-term the new habitat will at least mitigate for the impact and result in a Negligible (not significant) effect.

Badger

11.382 The four badger setts to be lost will need to be closed in advance of works commencing in relevant parts of the site. Closure will need to take place under a Natural England Badger Mitigation licence, following approved methods and within the appropriate seasonal window (1 July to 30 November inclusive). The mitigation is therefore secured in this case, by virtue of the legal protection afforded to badgers and the requirement for a licence. Further details will be included in the CEMP. As a result, a Negligible (not significant) effect is predicted.

Brown Hare

11.383 Site clearance and topsoil stripping within the western part of the site will need to be overseen by an ecologist, with searches made for brown hares prior to works commencing. Any animals found would need to be encouraged to move into retained habitat. Further details will be included in the CEMP. It is not possible to mitigate for the loss of the population from the site and an adverse effect on brown hares at the Local scale is therefore still predicted, resulting in a Minor Adverse (**significant**) effect.

Hedgehog

11.384 Site clearance activities across the site will need to be overseen by an ecologist, with searches made for hedgehogs prior to works commencing. Any animals found would need to be relocated into retained habitat. Further details will be included in the CEMP. As a result, a Negligible (not significant) effect is predicted.

Completed Development Mitigation

11.385 All potential completed development effects, in terms of their scale and nature, will remain as discussed above under *'Potential Effects'*, with the exception of the following effects which have been identified to require mitigation, or otherwise benefit from enhancement measures.

Ascension Parish Burial Ground City Wildlife Site

11.386 The CiWS could be impacted if residents of the new properties within the Proposed Development deposit litter or garden waste over the boundary onto the CiWS. The illustrative layout for the Proposed Development shows an area of open space along the site's eastern boundary, with no residential properties backing onto the boundary. The area of open space would be managed by the University of Cambridge and therefore an adverse impact on the CiWS is unlikely to occur. This is dependent on the detailed layout of Plots H2 and H3 which will

not be determined until RMA stage, although it is a likely outcome given the requirements for distances between new properties and the site boundary. As a result, a Negligible (not significant) effect is predicted.

Veteran Oak Tree

11.387 The RMA for Plot F2 will need to ensure that the layout and height of buildings is designed to minimise the impact of changes to wind patterns on the tree. Preparation and submission of an Arboricultural Impact Assessment for Plot F2 could be secured by way of an appropriately worded planning condition.

11.388 A Veteran Oak Management Plan was prepared in 2013 to guide long-term management of the tree (Lockhart Garratt Report, Document Reference 14-0209/3639 Rv4). This document will be reviewed and updated to account for the construction of Phase 1 and ensure long-term survival of the tree going forwards, including the requirements for watering. This could be secured by way of an appropriately worded planning condition. As a result of the proposed mitigation, a Negligible (not significant) effect is predicted.

Ponds

11.389 The illustrative landscape design shows the provision of two new ponds:

- A pond adjacent to the allotments and play area in Amenity Cluster C; and
- A pond within one of the attenuation basins in the western part of the site – whilst the attenuation basins would generally be dry, a permanent pond would be created in one part of a basin by over-deepening the basin and setting the level of outflow accordingly.

11.390 The Proposed Development therefore has the potential to result in a beneficial effect at the Local scale if ponds with high biodiversity value are created in the long-term. However, the delivery of ponds as part of the landscaping is not secured and therefore a beneficial effect is not concluded in this case. Therefore, with consideration of the reasonable worst-case scenario, no effect is likely to occur.

Woodlands

11.391 The existing chestnut paling along the northern edge of Storey's Way Wood will be extended to also run along the western and southern edge of the woodland to discourage public access, when Plots H2, H3 or J come forward for development.

11.392 The existing chestnut paling along the northern and eastern edges of Cricket Pitch Wood will be extended to also run along the southern edge of the woodland to discourage public access when Plot J comes forward for development.

11.393 Chestnut Paling will be installed along the northern and southern edges of Pheasant Plantation when Amenity Cluster C comes forward for development, or the security fence that currently restricts access to the woodland from Brook Leys is removed.

11.394 Details are to be provided in the Ecological Enhancement Plan, the implementation of which could be secured through an appropriately worded planning condition. As a result, a Minor Beneficial (**significant**) effect is predicted.

Barbastelle Bats

11.395 The layout of buildings with Plot J in particular will need to be designed to minimise light spill onto Storey's Way Wood. Lighting along the pedestrian/cycle route on the northern edge of Storey's Way Wood will need to be low level, bollard lighting as per the Lighting Design Concept Proposal (Document Reference NWC-MP2024-BDP-XX-RP-00001, Rev P07). These measures could be secured by way of an appropriately worded planning condition, requiring the RMA to minimise light spill onto retained woodland, hedgerows and other suitable habitat. This condition could equally be applied to all RMA.Lighting along the northern half of the pedestrian/cycle route between Washpit Brook and Huntingdon Road/Girton College will need to be low level, bollard lighting as per the Lighting Design Concept Proposal (Document Reference NWC-MP2024-BDP-XX-RP-00001, Rev P07). This could be secured by way of an appropriately worded planning condition, requiring the relevant RMAs to minimise light spill onto Hedgerow H6.

11.396 As a result, a Negligible (not significant) effect is predicted.

Brown Long-Eared Bats

11.397 The measures described above for barbastelle bats will also mitigate potential impacts on brown long-eared bats, to minimise the impact of lighting on this species accessing the edge of Storey's Way Wood. The detailed design will also need to minimise likely light spill onto the areas between Storey's Way Wood and the Horse Chestnut Avenue. With the implementation of these measures, a Negligible (not significant) effect is predicted.

Noctule Bats

11.398 The landscaping of areas of open space associated with the Proposed Development will ensure that any short-term losses of foraging habitat for noctules are reversed in the long-term. No other impacts on this species are predicted and therefore no mitigation is required.

Summary of Potential Impacts and Mitigation

11.399 Table 11.4 summaries the potential impacts of the Proposed Development on each receptor, arising from both the enabling, demolition and construction phase and the completed development phase, as well as the mitigation measures required.

Table 11.4 Summary of Potential Impacts and Mitigation

Receptor	Scale of Importance	Enabling, Demolition and Construction		Completed Development	
		Potential Impacts	Mitigation	Potential Impacts	Mitigation
Ascension Parish Burial Ground CiWS	County	Dust deposition	Measures to prevent incorporated into CEMP	Dumping of litter or garden waste	Detailed design to secure public open space as a buffer
Bird Sanctuary, Conduit Head CiWS	County	Water borne pollution	Measures to prevent incorporated into CEMP	No impact	None required
Scrub East of M11 Verge CiWS	County	None	None required	Increased recreational pressure	None required
Veteran Oak Tree	County	Dust deposition	Measures to prevent incorporated into CEMP	Changes to wind patterns or hydrology arising from Plot F2	Building layout within Plot F2 to be designed appropriately. Update of the Veteran Oak Management Plan
Washpit Brook	Local	Temporary bridge in northern part of site Minor encroachment into riparian zone Potential for pollution	Alignment of bridge at existing structure; no in-channel works Detailed design of play area in Amenity Cluster C to ensure soft landscaping Measures to prevent incorporated into CEMP	Increased recreational pressure Watercourse enhancement measures (positive)	None required None required
Lagoon at Brook Leys and other Phase 1 wetland habitats	Local	Construction of drainage discharge at the lagoon Potential for pollution	Negligible impact – none required Measures to prevent in CEMP	No impact	None required

Receptor	Scale of Importance	Enabling, Demolition and Construction		Completed Development	
		Potential Impacts	Mitigation	Potential Impacts	Mitigation
Ponds	Local	Loss of one permanent pond and six temporary ponds Water borne pollution	None required Measures to prevent incorporated into CEMP	Provision of new ponds as part of illustrative landscape design	None required
Woodlands	Local	Accidental damage or dust deposition	Measures to prevent incorporated into CEMP; tree protection fencing to be detailed at RMA stage	Increased recreational pressure Woodland enhancement measures (positive)	Installation of chestnut paling to discourage public access None required.
Hedgerows	Local	Loss of four native hedgerows, totalling 460m c.10m gap in another hedgerow Accidental damage or dust deposition Provision of new hedgerows as part of illustrative landscape design	Not possible to mitigate Measures to prevent incorporated into CEMP; tree protection fencing to be detailed at reserved matters stage None required	Provision of new hedgerows as part of illustrative landscape design (positive)	None required
Other Linear Features and Wildlife Corridors	Local	Removal of one horse chestnut tree but overall avenue retained Accidental damage or dust deposition	None required Measures to prevent incorporated into CEMP; tree protection fencing	No impact	None required
Invertebrates	Local	Removal of log pile of felled oak trees may result in loss of habitat for Nationally Scarce timberworm beetle No other significant effects identified	Relocate a proportion of the felled oak trees within retained habitat during construction of Plot J	No impact	None required
Great Crested Newt	County	Risk of newts being killed or injured during landscaping works associated with the eastern edge of Amenity Cluster C No other likely impacts, under current status provided that the temporary newt fence is retained	Ecological supervision of works Modification of Natural England Great Crested Newt Mitigation Licence Retain and maintain temporary newt fence; monitor population with Pond 6 Review as part of reserved matters application for Plot J	No impact	None required
Common Toad	Local	Risk of toads being killed or injured during works in Amenity Cluster C, Plots E1, F1, G and J	Ecological supervision of works in these locations, to be included in the CEMP	No impact	None required
Grass Snake	Local	Risk of grass snakes being killed or injured	Ecological supervision of works	No impact	None required
Barn Owl	Local	Loss of a nest site Risk of killing, injury, destruction of nest/eggs Risk of disturbance	Provision of two owl boxes (compensation) in locations with good foraging habitat and low levels of public use	No impact	None required
			Demolition of building outside of nesting season		
Skylark	Local	Loss of all skylarks from the site (9 pairs) Risk of killing, injury, destruction of nest/eggs	Off-site improvement measures at Coton Countryside Reserve secured until 2035 by the S106 for Phase 1 (compensation) Measures to minimise incorporated in the CEMP	No impact	None required
Whitethroat	Local	Short-term (5-10 years) reduction in breeding habitat Risk of killing, injury, destruction of nest/eggs	None proposed Measures to prevent incorporated into CEMP	No impact	None required
Linnet	Local	Long-term (permanent) reduction in breeding habitat (up to 9 pairs) Risk of killing, injury, destruction of nest/eggs	Off-site improvement measures at Coton Countryside Reserve secured until 2035 will provide additional habitat (compensation) Measures to prevent incorporated into CEMP	No impact	None required
Woodcock	Local	Long-term (permanent) reduction in foraging habitat	Management of retained grassland north of Pheasant Plantation to provide suitable habitat	No impact	None required
Barbastelle Bat	Local	No impact	None required	Lighting affecting use of Storey's Way Wood, Horse Chesnut Avenue and Hedgerow H6	Layout of buildings in Plot J to minimise light spill onto woodland edge; bollard lighting along pedestrian/cycle routes
Brown Long-Eared Bat	Local	Loss of a small irregularly used roost	Building demolition under Natural England licence. Not possible to mitigate loss of roost. New roosting features will/have been provided as compensation	Lighting affecting use of Storey's Way Wood and access to Horse Chestnut Avenue	Layout of buildings in Plot J to minimise light spill onto woodland edge and habitat linking woodland to Horse Chestnut Avenue
Noctule Bat	Local	Loss of a small proportion of available foraging habitat on a phased basis	None required	No impact	None required
Water Vole	Local	Loss of temporary ponds Risk of water voles being killed or injured	Creation of new permanent ponds Displacement of water voles under licence from working areas	No impact	None required
Otter	Local	No impact	None required	Increased recreational pressure	Not possible to mitigate
Badger	Local	Loss of four setts (subsidiary/outlying)	None required	Increased road-related mortality	None required

Receptor	Scale of Importance	Enabling, Demolition and Construction		Completed Development	
		Potential Impacts	Mitigation	Potential Impacts	Mitigation
		Risk of badgers being killed or injured Loss of / change in foraging habitat	Sett closure under licence None required		
Brown Hare	Local	Loss of population from the site Risk of animals being killed or injured	No mitigation is possible Ecological supervision of works	No impact	None required
Hedgehog	Local	Risk of hedgehogs being killed or injured	Ecological supervision of works	Increased road-related mortality	None required

Residual Effects

11.400 All of the residual effects resulting from the Proposed Development, are presented in Table 11.5, identifying whether the effect is significant or not.

Table 11.5 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significance		Geo	D I	P T	St Mt Lt
			CIEEM	EIA				
Enabling, Demolition and Construction								
Ascension Parish Burial Ground CiWS	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	C	-	-	-
Bird Sanctuary, Conduit Head CiWS	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	C	-	-	-
Scrub East of M11 Verge CiWS	No effect	n/a	No effect	No effect	C	-	-	-
Veteran Oak Tree	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	C	-	-	-
Washpit Brook	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Lagoon at Brook Leys and other Phase 1 wetland habitats	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Ponds	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Woodlands	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Hedgerows	Minor fragmentation of one hedgerow Short-term reduction in hedgerow habitat until new planting matures (20-30 years)	Short-term adverse, reducing to negligible	Adverse effect at the Local scale (short-term) reducing to no significant effect	Minor Adverse (**significant**) reducing to Negligible (not significant)	L	D	T	St
Other Linear Features and Wildlife Corridors	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Invertebrates	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Great Crested Newt	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	C	-	-	-
Common Toad	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Grass Snake	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Barn Owl	Loss of a nest site	Adverse	Significant effect at the Local scale	Minor Adverse (**significant**)	L	D	P	Lt
Skylark	Loss of breeding habitat for 9 pairs	Adverse	Significant effect at the Local scale	Minor Adverse (**significant**)	L	D	P	Lt
Whitethroat	Reduction of breeding habitat in the short-term	n/a	Significant effect at the Local scale	Negligible (not significant)	L	-	-	-
Linnet	Loss of breeding habitat for up to 9 pairs	Adverse	Significant effect at the Local scale	Minor Adverse (**significant**)	L	D	P	Lt
Woodcock	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Barbastelle Bat	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Brown Long-Eared Bat	Loss of a roost	Adverse	Significant effect at the Local scale	Minor Adverse (**significant**)	L	D	P	Lt
Noctule Bat	Loss of a small proportion of available foraging habitat within the site during construction only and on a phased basis with replacement habitat delivered in open space	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Water Vole	Temporary reduction in the amount of habitat available in the short-term (2-3 years). No residual effect in the long-term, assuming effective mitigation	Adverse	Significant effect at the Local scale (2-3 years) reducing to No significant effect in the long-term	Minor Adverse (**significant**) reducing to Negligible (not significant)	L	D	T	St
Otter	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Badger	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Brown Hare	Loss of population from the site	Adverse	Significant effect at the Local scale	Minor Adverse (**significant**)	L	D	P	Lt
Hedgehog	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	L	-	-	-

Receptor	Description of the Residual Effect	Scale and Nature	Significance		Geo	D I	P T	St Mt Lt
			CIEEM	EIA				
Completed Development								
Ascension Parish Burial Ground CiWS	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	C	-	-	-
Bird Sanctuary, Conduit Head CiWS	No effect	n/a	No effect	No effect	C	-	-	-
Scrub East of M11 Verge CiWS	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	C	-	-	-
Veteran Oak Tree	No residual effect, assuming effective mitigation	n/a	No significant effect	Negligible (not significant)	C	-	-	-
Washpit Brook	Increased recreational pressure Watercourse enhancement measures	Beneficial	Significant effect at the Local scale	Minor Beneficial (**significant**)	L	D	P	Lt
Lagoon at Brook Leys and other Phased 1 Wetland Habitats	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Ponds	No effect	n/a	No effect	No effect	L	-	-	-
Woodlands	Woodland enhancement measures	Beneficial	Significant effect at the Local scale	Minor Beneficial (**significant**)	L	D	P	Lt
Hedgerows	Increase in hedgerow habitat	Beneficial	Significant effect at the Local scale	Minor Beneficial (**significant**)	L	D	P	Lt
Other Linear Features and Wildlife Corridors	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Invertebrates	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Great Crested Newt	No residual effect	n/a	No significant effect	Negligible (not significant)	C	-	-	-
Common Toad	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Grass Snake	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Barn Owl	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Skylark	No residual effect	n/a	No effect	No effect	L	-	-	-
Whitethroat	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Linnet	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Woodcock	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Barbastelle Bat	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Brown Long-Eared Bat	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Noctule Bat	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Water Vole	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Otter	Increased recreational pressure	Adverse	No significant effect	Negligible (not significant)	L	-	-	-
Badger	Increased road-related mortality	Adverse	No significant effect	Negligible (not significant)	n/a	-	-	-
Brown Hare	No residual effect	n/a	No significant effect	Negligible (not significant)	L	-	-	-
Hedgehog	Increased road-related mortality, but no overall impact on the population	n/a	No significant effect	Negligible (not significant)	L	-	-	-

Notes:

Residual Effect

- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), County (C), Regional (R), National (N)

D = Direct / I = Indirect

P = Permanent / T = Temporary

St = Short Term / Mt = Medium Term / Lt = Long Term

N/A = not applicable / not assessed

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

11.401 In the absence of the Proposed Development the baseline would be unlikely to change in relation to the majority of ecological receptors assuming that management of the site continues following the current regime. However, there are several temporary construction site ponds associated with the temporary construction site car park, haul road and access off Madingley Road. Most, if not all, of these ponds would be removed/in-filled when the temporary permission for the access, haul road and car park expire in 2034/2035.

Cumulative Effects Assessment

11.402 This section identifies the effects of the Proposed Development in combination with the effects of other cumulative schemes within the surrounding area (those schemes identified in **ES Volume 1, Chapter 2: EIA Methodology**). All of the cumulative schemes have been considered in the assessment, as far as possible given the information available about each on the Greater Cambridge Shared Planning website.

Enabling, Demolition and Construction

Ascension Parish Burial Ground City Wildlife Site

11.403 Given the distances between the Ascension Parish Burial Ground CiWS and the various Cumulative Schemes being considered by this assessment, no cumulative effects on the CiWS are predicted.

Bird Sanctuary, Conduit Head City Wildlife Site

11.404 Given the distances between the Bird Sanctuary, Conduit Head CiWS and the various cumulative schemes being considered by this assessment, no cumulative effects on the CiWS are predicted.

Scrub East of M11 Verge City Wildlife Site

11.405 The Scrub East of M11 Verge CiWS is located within the West Cambridge Site. The EIA for the West Cambridge proposed development predicted no residual effects on the CiWS assuming implementation of effective mitigation. Increased recreational pressure is unlikely to occur as a result of West Cambridge due to the nature of the proposed development being for commercial / research uses. The other cumulative schemes are a significant distance from the site and are therefore unlikely to result in increased recreational pressure in the CiWS. As a result, no cumulative effects on the CiWS are predicted.

Veteran Oak Tree

11.406 Given its location in the centre of the site, there is no potential for cumulative effects on the Veteran Oak Tree.

Washpit Brook

11.407 Given that no residual effects on the Washpit Brook are predicted, there are no likely cumulative effects on this receptor.

Lagoon at Brook Leys and other Phase 1 wetland habitats

11.408 Given the location of the lagoon and other wetland habitats in relation to the cumulative schemes, and that the Proposed Development will not result in a residual effect, there are no likely cumulative effects on this receptor.

Ponds

11.409 The cumulative schemes will also result in the loss of ponds (two lost from the West Cambridge site). However, given that the permanent pond being lost as a result of the Proposed Development is of low biodiversity value, and assuming that it is adequately compensated through the creation of two new ponds, a significant cumulative effect on ponds is not predicted.

Woodlands

11.410 Given that no residual effects on woodlands are predicted, there are no likely cumulative effects on this receptor.

Hedgerows

11.411 Given that the Proposed Development is predicted to result in a locally significant beneficial effect on hedgerows, there are no likely cumulative effects on this receptor.

Other Linear Features and Wildlife Corridors

11.412 Given that no residual effects on other linear features and wildlife corridors are predicted, there are no likely cumulative effects on this receptor.

Invertebrates

11.413 Given that no residual effects on invertebrates are predicted, there are no likely cumulative effects on this receptor.

Great Crested Newt

11.414 Given that no residual effects on great crested newts are predicted, there are no likely cumulative effects on this receptor.

Common Toad

11.415 Given that no residual effects on common toads are predicted, there are no likely cumulative effects on this receptor.

Grass Snake

11.416 Given that no residual effects on grass snakes are predicted, there are no likely cumulative effects on this receptor.

Barn Owl

11.417 None of the cumulative schemes have identified an impact on barn owl. A cumulative effect on this species is therefore not predicted.

Skylark

11.418 Darwin Green Phases One, Two and Three and West Cambridge are also likely to result in the loss of habitat used by skylark. These schemes will also contribute to the reduction in the local population and therefore act cumulatively with the Proposed Development. A skylark compensation strategy is proposed for Darwin Green Phases Two and Three, which would result in the provision of improved habitat for skylarks within an area of farmland to the west of Cambridge.

11.419 As with the off-site compensation being delivered for Phase 1 of the 2013 OPP, there would still be a locally significant effect on skylarks but there is unlikely to be a noticeable reduction in the County's population given how common the species is in Cambridgeshire. The cumulative effect is therefore considered unlikely to result in an increase in the significance of the effect of the Proposed Development alone (significant adverse effect at the Local scale / Minor Adverse (**significant**) effect).

Whitethroat

11.420 None of the cumulative schemes have identified an impact on whitethroat, although this species is likely to be present within the site boundaries for Darwin Green Phases One, Two and Three and West Cambridge, and therefore could be adversely affected.

11.421 Given the habitats present at those sites they are unlikely to support as a high a density of birds as the Proposed Development. In addition, whitethroat are a common species in Cambridgeshire and the County's population is therefore unlikely to be noticeably affected. Given this, and that the Proposed Development is predicted to have a Negligible (not significant) residual effect on whitethroat, it is considered unlikely that there would be significant cumulative effects on this species).

Linnet

11.422 As with skylark, given the habitats present it is likely that Darwin Green Phases One, Two and Three and West Cambridge will also have an adverse impact on linnet through loss of habitat. Given the size of the various sites and therefore maximum numbers of birds potentially affected, and how common the species is in Cambridgeshire, the cumulative effect is considered unlikely to result in an increase in the significance of the effect of the Proposed Development alone (significant adverse effect at the Local scale / Minor Adverse (**significant**) effect).

Woodcock

11.423 None of the cumulative schemes have identified an impact on woodcock. A cumulative effect on this species is therefore not predicted.

Barbastelle Bats

11.424 Barbastelle bats have a Core Sustenance Zone around their roosts of approximately 6km[Error! Bookmark not defined.]. Therefore the barbastelle bats that use the Proposed Development site are also likely to encounter the identified cumulative schemes. This species has been recorded at West Cambridge and Darwin Green Phases 2 and 3. It is also likely to use the land within Girton College. However, the Proposed Development is considered unlikely to have a significant residual effect on this species and therefore a significant cumulative effect is also considered unlikely to occur.

Brown Long-Eared Bats

11.425 Brown long-eared bats have a Core Sustenance Zone around their roosts of approximately 3km[Error! Bookmark not defined.]. Therefore the brown long-eared bats that use the Proposed Development site are also likely to encounter the identified cumulative schemes. However, none of the cumulative schemes have identified roosts of this species that would be affected. The loss of a small irregularly used roost at the Proposed Development site is considered unlikely to give rise to a significant cumulative effect on this species in association with the cumulative schemes as there will be other roost sites in the local area that will effectively replace the roost to be lost (given its status) and these are not located within any of the cumulative schemes.

Noctule Bats

11.426 Noctule bats have a Core Sustenance Zone around their roosts of approximately 4km[Error! Bookmark not defined.]. Therefore the noctule bats that use the Proposed Development site are also likely to encounter the identified cumulative schemes. The losses of foraging habitat for noctules associated with the Proposed Development are small and would be phased with replacement habitat provided as part of the landscaping scheme within areas of open space. It is therefore considered unlikely that there would be significant cumulative effects on this species.

Water Vole

11.427 Given that no residual effects on water voles are predicted, there are no likely cumulative effects on this receptor.

Otter

11.428 Given that no residual effects on otters are predicted, there are no likely cumulative effects on this receptor.

Badger

11.429 Given the locations of the various cumulative schemes in relatively close proximity to the site, and the size of territories held by badgers, it is possible that social groups of badgers using the site may also forage within the footprint of one or more of the cumulative schemes. Therefore, there may be a cumulative effect on badgers arising from loss of foraging habitat, leading to further reduction in the size of the resident social groups. However, badgers are not considered to be a priority species for conservation, and therefore the cumulative effects would not be considered to be significant in any case.

Brown Hare

11.430 Darwin Green Phases One, Two and Three are also likely to result in the loss of habitat used by brown hare. These schemes will also contribute to the reduction in the local population and therefore act cumulatively with the Proposed Development. However, the numbers of brown hares likely to be affected by all schemes combined will still represent a very small proportion of the County's population. Given this, and that the Proposed Development is predicted to have a Negligible (not significant) residual effect on brown hare, it is considered unlikely that there would be significant cumulative effects on this species.

Hedgehog

11.431 Given that no residual effects on hedgehogs are predicted, there are no likely cumulative effects on this receptor.

Completed Development

Ascension Parish Burial Ground City Wildlife Site

11.432 Given that no residual effects on this CiWS are predicted, there are no likely cumulative effects on this receptor.

Bird Sanctuary, Conduit Head City Wildlife Site

11.433 Given that no residual effects on this CiWS are predicted, there are no likely cumulative effects on this receptor.

Scrub East of M11 Verge City Wildlife Site

11.434 Given that no residual effects on this CiWS are predicted, there are no likely cumulative effects on this receptor.

Veteran Oak Tree

11.435 Given that no residual effects on the Veteran Oak Tree are predicted, there are no likely cumulative effects on this receptor.

Washpit Brook

11.436 Given that the Proposed Development is predicted to result in a locally significant beneficial effect on the Washpit Brook, there are no likely cumulative effects on this receptor.

Lagoon at Brook Leys and Other Phase 1 Wetland Habitats

11.437 Given that no residual effects on the lagoon at Brook Leys and other Phase 1 wetland habitats are predicted, there are no likely cumulative effects on this receptor.

Ponds

11.438 Given that no residual effects on ponds are predicted, there are no likely cumulative effects on this receptor.

Woodlands

11.439 Given that the Proposed Development is predicted to result in a locally significant beneficial effect on woodlands, there are no likely cumulative effects on this receptor.

Hedgerows

11.440 Given that the Proposed Development is predicted to result in a locally significant beneficial effect on hedgerows, there are no likely cumulative effects on this receptor.

Other Linear Features and Wildlife Corridors

11.441 Given that no residual effects on other linear features and wildlife corridors are predicted, there are no likely cumulative effects on this receptor.

Invertebrates

11.442 Given that no residual effects on invertebrates are predicted, there are no likely cumulative effects on this receptor.

Great Crested Newt

11.443 Given that no residual effects on great crested newts are predicted, there are no likely cumulative effects on this receptor.

Common Toad

11.444 Given that no residual effects on common toads are predicted, there are no likely cumulative effects on this receptor.

Grass Snake

11.445 Given that no residual effects on grass snakes are predicted, there are no likely cumulative effects on this receptor.

Barn Owl

11.446 Given that no residual effects on barn owls are predicted, there are no likely cumulative effects on this receptor.

Skylark

11.447 Given that no residual effects on skylarks are predicted, there are no likely cumulative effects on this receptor.

Whitethroat

11.448 Given that no residual effects on whitethroats are predicted, there are no likely cumulative effects on this receptor.

Linnet

11.449 Given that no residual effects on linnets are predicted, there are no likely cumulative effects on this receptor.

Woodcock

11.450 Given that no residual effects on woodcock are predicted, there are no likely cumulative effects on this receptor.

Barbastelle Bats

11.451 Given that no residual effects on barbastelle bats are predicted, there are no likely cumulative effects on this receptor.

Brown Long-eared Bats

11.452 Given that no residual effects on brown long-eared bats are predicted, there are no likely cumulative effects on this receptor.

Noctule Bats

11.453 Given that no residual effects on noctule bats are predicted, there are no likely cumulative effects on this receptor.

Water Vole

11.454 Given that no residual effects on water voles are predicted, there are no likely cumulative effects on this receptor.

Otter

11.455 Otters are unlikely to be affected by any of the Cumulative Schemes and therefore there are no likely cumulative effects on this receptor.

Badger

11.456 The potential effects of the completed development on badgers are unlikely to give rise to any greater impact cumulatively with other schemes beyond that described for the enabling, demolition and construction phase.

Brown Hare

11.457 Given that no residual effects on brown hares are predicted, there are no likely cumulative effects on this receptor.

Hedgehog

11.458 There is likely to be a residual effect of the Proposed Development on hedgehogs but it is not considered to be significant. Given that no significant residual effects on hedgehogs are predicted, and that the population within the site is unlikely to regularly encounter the cumulative schemes as they are on the other side of major roads, there are no likely cumulative effects on this receptor.

LIKELY SIGNIFICANT EFFECTS

Enabling, Demolition and Construction

11.459 The likely significant residual effects of the Proposed Development on ecological receptors during enabling, demolition and construction are as follows:

- Minor fragmentation of one hedgerow and short term reduction in hedgerow habitat, resulting in a short-term Minor Adverse (**significant**) effect on hedgerow habitat, reducing to Negligible (not significant) in the long term;
- Loss of a barn owl nest site resulting in a Minor Adverse (**significant**) effect that will be compensated by the provision of two owl boxes within the Proposed Development;
- Reduction in the breeding population of skylarks resulting in a Minor Adverse (**significant**) effect. This effect has already been compensated in part by the provision of measures in off-site areas of farmland to make them more valuable for skylarks through the S106 agreement for Phase 1 of the 2013 OPP;
- Reduction in the breeding population of linnet, resulting in a Minor Adverse (**significant**) effect. This effect has already been compensated in part by the provision of measures in off-site areas of farmland through the S106 agreement for Phase 1 of the 2013 OPP;
- Loss of the brown hare population from the site, resulting in a Minor Adverse (**significant**) effect;
- Loss of a small irregularly used brown long-eared bat roost, resulting in a Minor Adverse (**significant**) effect, which will be compensated through provision of new roost sites; and
- Temporary reduction in the amount of habitat available to water voles in the short-term (2-3 years) resulting in a short-term Minor Adverse (**significant**) effect, reducing to Negligible (not significant) in the long term.

Completed Development

11.460 The likely significant residual effects of the Proposed Development on ecological receptors during ethe completed development phase are as follows:

- Delivery of measures to improve the Washpit Brook, which will be required to meet BNG targets, resulting in a Minor Beneficial (**significant**) effect;
- Delivery of measures to improve woodland habitat, which will be required to meet BNG targets , resulting in a Minor Beneficial (**significant**) effect; and
- Increase in the amount of hedgerow habitat as part of the landscape design, which will be required to meet BNG targets, resulting in a Minor Beneficial (**significant**) effect.

11.461 The Proposed Development also has the potential to extend the mosaic of habitats in the western part of the site, including Brook Leys, other Phase 1 wetland habitats and associated woodland and grassland through the landscape design of adjoining areas of open space. This could extend the area covered by this mosaic of habitats to beyond the 10ha threshold for habitat mosaics to be considered as County Wildlife Sites (CWSs). The Proposed Development therefore has the potential to effectively create a habitat mosaic of County importance that could be designated as a CWS. This would be an additional beneficial effect at the County scale, resulting in a Moderate Beneficial (**significant**) effect.

11.462 No additional cumulative effects have been identified with the exception of adverse effects on skylark, whitethroat, linnet and brown hare which may be affected by one or more of the cumulative schemes. However, the scale of significance of the effect is not considered to be any greater cumulatively for all schemes combined than for the Proposed Development alone.

11.463 The Proposed Development is committed to delivering a BNG of at least 10% in relation to habitat, hedgerow and watercourse units, to ensure compliance with Schedule 7A of the Town and Country Planning Act 1990 (as inserted by Schedule 14 of the Environment Act 2021). The BNG assessment has tested the illustrative landscape design and concluded that the following gains are realistically achievable, although the exact percentage gains will be dependent on the detailed design to be determined at the reserved matters stage:

- Habitat: 18.70%
- Hedgerow: 50.30%
- Watercourse: 21.28%

11.464 Further details are provided in the BNG report submitted as part of this OPA.

Chapter 12: Land Take and Soils (Agriculture)

TRIUM

LAND TAKE AND SOILS (AGRICULTURE)	
AUTHOR	Reading Agricultural Consultants Limited
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Land Take and Soils (Agriculture)** Annex 1: Agricultural Land Classification and Soil Resources.
KEY CONSIDERATIONS	Potential agricultural effects include: • Loss of agricultural land, including that of best and most versatile quality; and • Loss of and damage to the soil resources.
CONSULTATION	An EIA Scoping Report was prepared and submitted to South Cambridgeshire District Council (SCDC) and Cambridge City Council in November 2024 (**ES Volume 3, Appendix: EIA Methodology – Annex 1**). An EIA Scoping Opinion was subsequently received on 23 January 2025 and is included within **ES Volume 3, Appendix: EIA Methodology – Annex 2**. This agreed with the scope of this ES chapter and considered the assessment methodology suitable. Natural England was consulted during the EIA Scoping process and a summary of their feedback can be found in **ES Volume 3, Appendix: EIA Methodology – Annex 2**. Natural England's consultee comments do not seek any further assessment above the methodology proposed in the EIA Scoping Report. Natural England's guidance recommends a detailed Agricultural Land Classification survey and that the ES should set out details of how any adverse impacts on soils can be avoided or minimised and demonstrate how soils will be sustainably used and managed, including consideration in site design and master planning. All of this has been done and provided as part of the ES chapter and assessment.

ASSESSMENT METHODOLOGY

Basis of Assessment

12.1 The assessment presented in this ES chapter focuses on the reasonable worst-case scenario for land-take and soils, which assumes that all land within the application redline boundary would no longer have the potential to be available for agricultural use, and that all soils within the application redline boundary are potentially disturbed during the construction of the Proposed Development. Although the site already has consent to remove it from agricultural use under the 2013 OPP, this ES chapter assesses the impacts of the Proposed Development for the future phases of the North West Cambridge Masterplan on agricultural land and soils, given the new planning application being submitted, the time that has elapsed since the 2013 consent and that areas of the site have remained undisturbed and undeveloped in the interim.

Defining the Baseline

12.2 The current Agricultural Land Classification (ALC) and soil resources baseline conditions have been characterised through a site survey undertaken in 2010. It is considered that the baseline conditions for soils and agricultural land quality reported within the 2010 ALC survey remain applicable because the ALC is concerned with the long-term inherent physical characteristics of soils and not with the short-term use or management. However, the land use has changed substantially for most of the site since the survey was undertaken, and now there are only limited areas of undisturbed land. Nevertheless, the inherent quality of these remaining undisturbed areas is still intact and forms the baseline land quality. The study has further drawn upon a range of published data sources including mapping of bedrock geology and soil types, and agro-climatic data, and has also had regard to a recent site survey to inform the soil resource plan[1].

Evolution of the Baseline

12.3 As the ALC system is concerned with the long-term limitations on agricultural quality, the baseline conditions described in 2010 remain applicable for the undisturbed parts of the site, and there is not anticipated to be any change to the ALC or soil resources baseline in the future should the Proposed Development not come forward. There are also no anticipated changes to the day-to-day use of the land should the Proposed Development not go ahead.

Impact Assessment Methodology

Enabling, Demolition and Construction

12.4 The effects on agricultural resources are concerned with the permanent loss of land that could potentially be used for agriculture to the Proposed Development and the temporary and permanent impacts on the soil resources within the site.

12.5 This assessment is made on the basis that none of the land within the site will be available for potential agricultural use during the construction period and will remain permanently unavailable for agricultural use thereafter.

Phasing

12.6 The assessment of effects has not taken phasing into account, as it is assumed that the potential for agricultural use at the site will cease at the commencement of construction. No additional effects would arise by assessing the phasing.

Completed Development

12.7 All impacts on agricultural land or soil resources will be incurred during the enabling and construction works of the Proposed Development and therefore an assessment of the potential effects on agricultural land from the Completed Development is not required and not considered any further in this ES.

Assumptions and Limitations

12.8 The assessment assumes that there have been no significant and material changes to the condition of the undisturbed land since the baseline surveys were undertaken in 2010. This is confirmed by the site surveys undertaken for the Soil Resource Plan in 2025[1] which noted changes in land use and vegetation but no further excavations in the areas which are considered to still be potentially available for agricultural use.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

12.9 The receptors identified are agricultural land, particularly the best and most versatile (BMV) land, and soil resources.

12.10 Land which is classified as Grades 1, 2 and 3a in the ALC system is defined as BMV agricultural land in the National Planning Policy Framework[2].

12.11 Under the ALC guidelines[3], Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use. Grade 2 is very good quality agricultural land, with minor limitations which affect crop yield, cultivations or harvesting. Grade 3 land has moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield, and is subdivided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). Grade 4 land is poor quality agricultural land with severe limitations which significantly restrict the range of crops and/or level of yields. Grade 5 is very poor quality land, with very severe limitations which restrict use to permanent pasture or rough grazing.

[1] *Tim O'Hare Associates LLP (2025). North West Cambridge Phases 2 & 3, Soil Resource Survey.*
[2] *Ministry of Housing, Communities and Local Government (2025). National Planning Policy Framework*
[3] *MAFF (1988). Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land.* http://publications.naturalengland.org.uk/publication/6257050620264448

12.12 The sensitivity of agricultural land is therefore defined according to its grade within the ALC, as set out in Table 12.1.

12.13 The sensitivity of the soil resource to structural damage is determined according to the guidance produced by IEMA[4], also set out in Table 12.1.

Table 12.1 Criteria for Determining Receptor Sensitivity

Sensitivity	Agricultural Land	Soil Resources
High	Grades 1 and 2	Clay, silty clay, sandy clay, heavy clay loam, heavy silty clay loam.
Medium	Subgrades 3a and 3b	Medium clay loam, medium silty clay loam, sandy clay loam
Low	Grades 4 and 5	Sand, loamy sand, sandy loam, sandy silt loam, silt loam

Magnitude of Impact

12.14 The magnitude of impact on agricultural land is related to the statutory consultation arrangements with Natural England for development involving agricultural land, whilst the magnitude of impact on soil resources takes into account the continued ability of the soil to fulfil its primary ecosystem functions. The criteria for determining the magnitude of impact on agriculture and soil receptors is set out in Table 12.2.

Table 12.2 Criteria for Determining Magnitude of Impact

Magnitude	Land Take of Agricultural Land Area	Soil Resources
High	More than 20 hectares	The soil displaced from development is unable to fulfil one or more of the primary soils functions
Medium	5 – 20 hectares	The soil displaced from development mostly fulfils the primary soil functions off-site or has a reduced capacity to fulfil the primary functions on site
Low	Less than 5 hectares	The soil displaced from development mostly fulfils the primary soil functions on-site
Negligible	Less than 0.1 hectares	The soil retains its existing functions on-site

Defining the Effect

12.15 Effects on agricultural land and soil resources are local effects, occurring within the site. It is assumed that the disturbed soil resources will be retained and re-used on-site where possible as part of the enabling and construction of the Proposed Development. The loss of agricultural land to development and the disturbance and loss of function of soil resources are both adverse effects.

12.16 The effect on agricultural land will be direct and permanent and the effect on soil resources will be direct and likely to be temporary but medium to long-term as re-establishing structures and biological communities in soils that have been disturbed and reinstated can take several years.

12.17 A major effect occurs where the Proposed Development is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity.

12.18 A moderate effect occurs where the Proposed Development is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability.

12.19 A minor effect occurs where the Proposed Development is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the Proposed Development is likely to cause a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change.

12.20 An effect is negligible where the Proposed Development is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

12.21 The scale of the effects are determined by combining the sensitivity of the resource with the magnitude of impact, as set out in **ES Volume 1, Chapter 2: EIA Methodology** and below in Table 12.3.

Table 12.3 Matrix for Classifying the Scale of Effects

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

Categorising Likely Significant Effects

12.22 Effects that are identified as being moderate or major are classed as significant effects.

BASELINE CONDITIONS

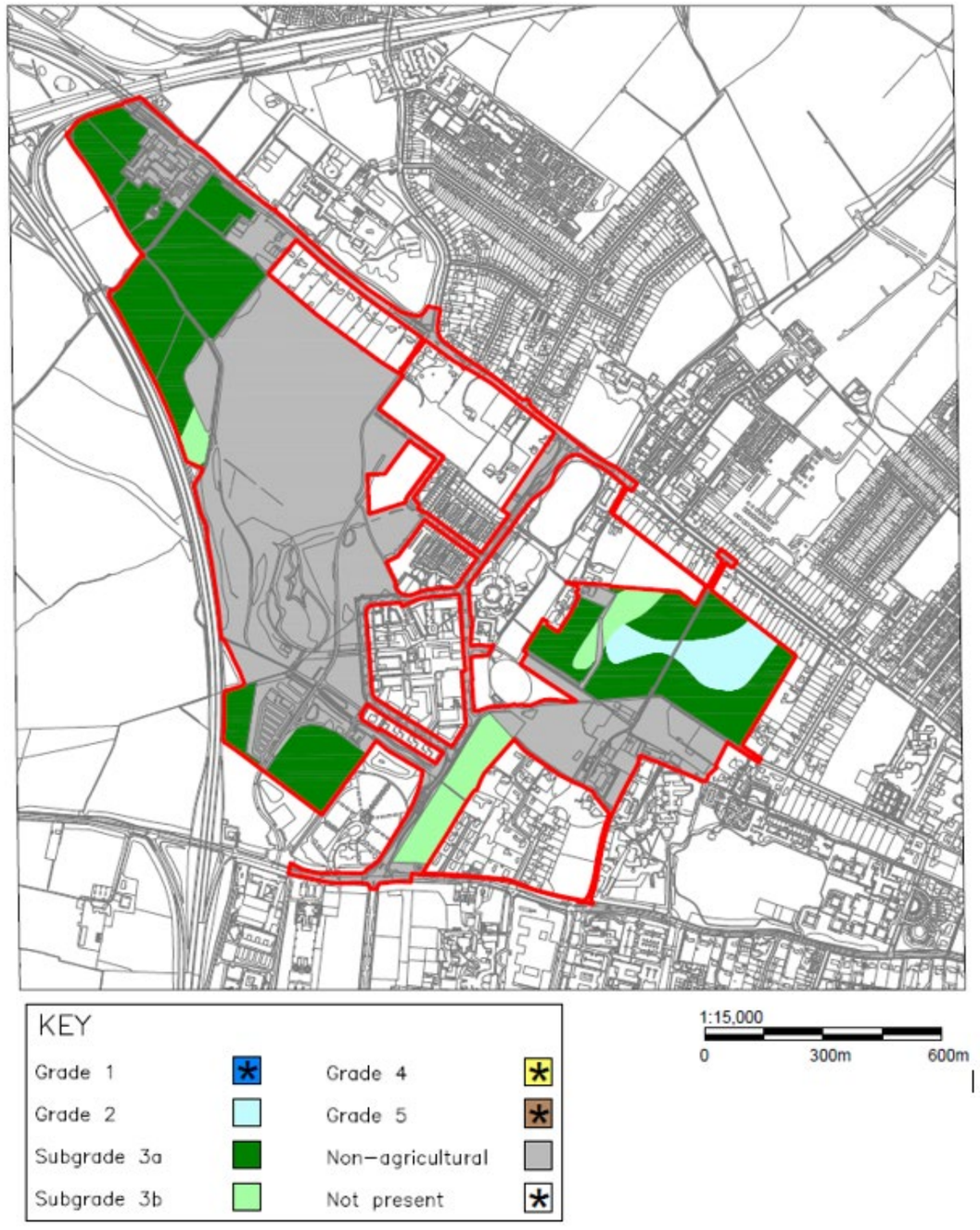
12.23 The site extends to approximately 114ha in total, of which approximately 40.3ha is in unused undisturbed permanent pasture, other than a field in the north which is grazed by sheep and horses. The remainder of the site (approximately 74ha) comprises buildings, areas of topsoil and clay from Phase 1 of the 2013 OPP, construction sites, hard standing, but also includes some open space, recreational ground and a large balancing pond.

12.24 A detailed soil and ALC survey was undertaken across the whole site in 2010. In total, 66 observations were made within the current site boundaries. The currently undisturbed land was classified as mostly Subgrade 3a (30.8ha), with 3.6ha at the site classified as Grade 2 and around 5.9ha as Subgrade 3b. Approximately 74ha is now classified as non-agricultural land and not potentially available for agricultural use. The agricultural land quality of the site is shown in Figure 12.1

12.25 Two main soil types are present. Broadly across the north is stony loam and sand whilst in the south the soils are variably calcareous, loamy fine earth and clay.

[4] *IEMA (2022). A New Perspective on Land and Soil in Environmental Impact Assessment.*

Figure 12.1 Agricultural Land Quality



RECEPTORS AND RECEPTOR SENSITIVITY

Existing

12.26 The existing receptors on-site are:

- BMV agricultural land in Grades 2 and 3a which is a resource of medium to high sensitivity;
- Non-BMV agricultural land in Subgrade 3b which is a resource of medium sensitivity;
- Fine loamy and sandy soil textures, which are resources of medium and low sensitivity; and
- Clayey soil textures, which is a resource of high sensitivity.

Introduced

12.27 No additional receptors will be introduced as part of the Proposed Development.

EMBEDDED MITIGATION

Enabling, Demolition and Construction

12.28 The Proposed Development includes some green space and leisure use, primarily on the western side. These areas of unbuilt aspects mostly cover land of Subgrade 3a quality. Use of some BMV agricultural land in these locations has therefore been avoided.

Completed Development

12.29 There is no relevant mitigation for the completed development.

POTENTIAL EFFECTS

Enabling, Demolition and Construction

12.30 Construction of the Proposed Development will require the development of 40.3ha of land potentially available for agricultural use, of which 34.4ha is in Grades 2 and 3a, and of medium to high sensitivity. The magnitude of change is high. The effect is assessed as being a local, direct, permanent Moderate to Major Adverse effect (**significant**) on BMV agricultural land.

12.31 The topsoil resource across the site is mainly of medium sensitivity to handling, with some low sensitivity sandy subsoils and some high sensitivity clayey subsoils. Prior to mitigation measures, the potential magnitude of change to soil resources is high. The Proposed Development would therefore have a direct, long-term, temporary Moderate to Major Adverse effect (**significant**) on soil resources.

Completed Development

12.32 There will be no additional effects incurred once the Proposed Development is complete.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Enabling, Demolition and Construction Mitigation

12.33 The potential enabling and construction effects on agricultural land will remain as discussed in '*Potential Effects*' as there are no measures available or required to mitigate the direct and permanent loss of agricultural land.

The site already has outline planning permission from 2013 and is allocated for development in the Development Plan, and the decision to remove the land from potential agricultural use has already been agreed and accepted.

12.34 Potential enabling and construction effects on soil resources can be mitigated. The primary measures to mitigate the impacts on soil resources will be set out in a Soil Resources Management Plan (SRMP). The SRMP will consider the measures set out in the Defra Construction Code of Practice for the Sustainable Use of Soils which includes confirmation of the different soil types and depths (based on the soil surveys already undertaken); the most appropriate re-use for the different types of soils within the detailed design; and the proposed methods for handling, storing and replacing soils on site. The adoption of the SRMP will ensure that the soil resources on site will be able to continue to fulfil their various ecosystem services and functions.

12.35 The aim of the SRMP will be to re-use displaced soil resources on-site in the detailed design of open spaces and green infrastructure. The quality of soils retained on-site would be maintained by following good practice guidance on soils handling and storage, particularly to minimise soil handling and avoid compaction and biodegradation of soils.

12.36 With the adoption of appropriate mitigation for the handling and restoration of soils, most soils will be able to continue their various ecosystem functions on the site, principally as a medium for producing biomass; for storage and cycling of water and carbon; and for supporting habitats, biodiversity and landscape planting. This will reduce the magnitude of impact on soil resources to low, and the residual effect on soil resources to a Minor to Moderate Adverse effect (not significant).

12.37 The reinstated soil resources shall be monitored for up to five years following the completion of the Proposed Development, for signs of such issues as poor drainage and anaerobism which shall be ameliorated as necessary.

12.38 The above described SRMP measures are set out within **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule** and shall be secured through an appropriately worded planning condition.

Completed Development Mitigation

12.39 No mitigation is required once the Proposed Development is complete.

Residual Effects

12.40 All of the residual effects resulting from the Proposed Development are presented in Table 12.4, identifying whether the effect is significant or not.

Table 12.4 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Enabling, Demolition and Construction							
BMV agricultural land	Permanent loss of 34.4ha of Grade 2 and Subgrade 3a to built development	Moderate to Major Adverse	Significant	L	D	P	Lt
Soil resources	The soil mostly continues to fulfil ecological functions	Minor to Moderate Adverse	Not significant	L	D	T	Lt

Notes:
Residual Effect
- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

12.41 The ALC is concerned with the long-term inherent physical characteristics of the site and its soils. If the Proposed Development were not to be implemented, the current soil and ALC baseline conditions are expected to remain unchanged for the foreseeable future. In the longer term, it is expected that climate change will affect the quality of the soils at the site in the absence of the Proposed Development coming forward and will vary according to the soil types identified.

12.42 The land use circumstances are likely to remain unchanged should the Proposed Development not proceed.

Cumulative Effects Assessment

Enabling, Demolition and Construction

12.43 This section identifies the effects of the Proposed Development in combination with the effects of other Cumulative Schemes within the surrounding area (those schemes identified in **ES Volume 1, Chapter 2: EIA Methodology**). Of these schemes, only the consented development at Darwin Green Phases Two and Three, Cambridge Road, Impington (Ref 22/02528/OUT) includes agricultural land and would have the potential to result in cumulative effects on BMV agricultural land.

12.44 The ALC data for the Darwin Green development indicated that the site included 39.5ha of BMV land in Grades 2 and 3a. This would lead to a cumulative permanent loss of 73.9ha of Grades 2 and 3a land in the area, which would be a high magnitude of impact on a resource of medium to high sensitivity, and result in a local, direct, permanent Moderate to Major Adverse cumulative effect on agricultural land, which is **significant**.

Completed Development

12.45 There are no cumulative effects arising from completed schemes.

LIKELY SIGNIFICANT EFFECTS

12.46 The Proposed Development is likely to result in a Moderate to Major Adverse effect on BMV agricultural land, which is **significant**. This remains the case from the assessment previously undertaken at the time of the 2012 ES and has been weighed in the planning balance when granting outline consent and allocating the land within the Development Plan.

12.47 The cumulative effect on BMV agricultural land with other developments in the locality is also Moderate to Major Adverse.

Chapter 13: Ground Conditions and Land Contamination

TRIUM

GROUND CONDITIONS AND LAND CONTAMINATION	
AUTHOR	AECOM
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Ground Conditions and Land Contamination** Annex 1: Land Contamination Preliminary Risk Assessment (PRA)
KEY CONSIDERATIONS	This chapter presents an assessment of the ground conditions and land contamination effects that are likely to arise from the construction and operation of the Proposed Development
CONSULTATION	An EIA Scoping Report was prepared and submitted to Greater Cambridge Shared Planning Service (GCSPS) in November 2024 (**ES Volume 3, Appendix: EIA Methodology – Annex 1**). An EIA Scoping Opinion was subsequently received on 23 January 2025 and is included within **ES Volume 3, Appendix: EIA Methodology – Annex 2**. This generally agreed with the scope of this ES chapter.

ASSESSMENT METHODOLOGY

Basis of Assessment

13.1 This chapter of the Environmental Statement presents the assessment of the likely significant environmental effects of the Proposed Development in relation to ground conditions and land contamination. The assessment considers potential impacts arising during the enabling, demolition and construction; and operation of the Proposed Development. Where applicable, suitable mitigation measures for the identified significant adverse effects are provided.

13.2 This ES chapter also assesses the impacts on both groundwater and surface water in relation to land contamination.

13.3 Due to the outline nature of the planning application, the assessment presented in this ES chapter is based on the maximum development parameters as shown on the Parameter Plans that accompany the planning application.

13.4 Broader impacts on agricultural land and soils and water resources are assessed separately in E**S Volume 1, Chapter 12: Land Take and Soils (Agriculture)** and **ES Volume 1, Chapter 14: Water Resources, Flood Risk and Drainage**.

13.5 This ES chapter is supported by the Land Contamination Preliminary Risk Assessment (PRA) Phase 1 Desk-Based Assessment (**ES Volume 3, Appendix: Ground Conditions and Land Contamination – Annex 1**).

Defining the Baseline

13.6 The baseline conditions represent the existing environmental conditions against which the potential effects of the Proposed Development are assessed. For the purposes of this assessment, the following study areas have been defined:

- 250m radius from the site for the assessment of ground conditions and land contamination; and
- 1km radius from the site for controlled waters receptors.

13.7 The baseline conditions have been defined using the data obtained from the British Geological Survey and other information sources referenced later in this ES chapter (refer to '*Baseline Conditions*').

Evolution of the Baseline

13.8 Demolition and construction works are anticipated to commence in 2027, with the Proposed Development fully completed and operational by 2037. It is considered unlikely that baseline conditions during demolition and construction and operational phases of the Proposed Development will differ significantly from the existing conditions. However, it is noted that new receptors including construction workers (during demolition and construction works), and future site users and maintenance workers (post-completion) will be introduced.

Impact Assessment Methodology

13.9 The basis of the assessment of significant effects is through the development of a conceptual site model (CSM) of source-pathway-receptor linkages (known as potential contaminant linkages) and an assessment of the risk associated with the identified contaminant linkages. This has been carried out with reference to the CIRIA Report C552.[1] The scale of risk is determined from a matrix that combines the consequence of a hazard with the likelihood of the event happening.

13.10 This assessment includes identification of the requirement for further Ground Investigation (GI) works and risk assessment to address uncertainties in the CSM. Together with an initial appraisal of likely mitigation measures required to render the site suitable for use, and to mitigate identified unacceptable risks to environmental receptors will be completed. The initial conceptual model developed using desk-based information will be updated following any further intrusive investigations or monitoring work.

13.11 In determining whether effects are considered 'significant' in the context of an Environmental Impact Assessment (EIA), the results of the risk assessment will serve as the basis. Any linkages or effects on receptors that are classified as moderate or higher, after mitigation measures have been applied, will be deemed 'significant.' The risk assessment includes an evaluation of the sensitivity of the identified receptors together with an assessment of the consequences (or magnitude) of the effects as well as the likelihood that the event will occur and therefore is considered appropriate as a basis for establishing significance of effects.

13.12 The CSM is detailed in the Land Contamination PRA (**ES Volume 3, Appendix: Ground Conditions and Land Contamination – Annex 1**), which uses the source-pathway-receptor approach to identify potential significant contaminant linkages. The Qualitative Environmental Risk Assessment (ERA) is detailed in Table 13.12.

13.13 The ground conditions and land contamination assessment consider the following receptors:

- Future site users;
- Construction and maintenance workers;
- Adjacent site users;
- Groundwater (Principal aquifer within the West Melbury Marly Chalk Formation);
- Surface water (Washpit Brook and River Cam);
- Traveller's Rest Pit Site of Special Scientific Interest (SSSI) site; and
- Building and development infrastructure.

13.14 The methodology for assessing the likely significant effects of the Proposed Development on ground conditions and land contamination follows the standard guidance as per the following:

- Department for Environment Food & Rural Affairs (2012) Environmental Protection Act 1990: Part 2A – Contaminated Land Statutory Guidance;
- British Standards Institute (2019) BS8485:2015+A1:2019: Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (+A1:2019);
- Design Manual for Roads and Bridges (DMRB) LA109 Land Geology and Soils (National Highways, 2019a);
- DMRB LA113 Road Drainage and the Water Environment (National Highways, 2020);
- DMRB LA 104 Environmental Assessment and Monitoring (National Highways, 2020);

[1] *Contaminated Land: A Guide to Good Practice CIRIA Report 552 (2001)*

- Land Contamination: Risk Management (LCRM) (Environment Agency, 2023); and
- A New Perspective on Land and Soil in Environmental Impact Assessment (Institute of Environmental Management and Assessment, 2022).

13.15 The assessment of receptor value (sensitivity) for human health, geology, controlled waters and structures follows the procedure described in Table 13.11 of the DMRB LA 109 (National Highways, 2019a). The assessment of receptor value (importance) for groundwater resources follows the procedure described in Table 3.70 of the DMRB LA 113, Road Drainage and the Water Environment (National Highways, 2020).

Enabling, Demolition and Construction

13.16 The enabling, demolition and construction works have been determined based on information provided in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**.

13.17 The potential impacts prior to implementation of mitigation measures during the enabling, demolition and construction phase of the Proposed Development, which have therefore been assessed within this ES chapter, are as follows:

- Land contamination impacts on human receptors (construction workers and nearby site users). Impacts may include direct contact with or ingestion of contaminated soil, dust, or water;
- Inhalation of hazardous gases or vapours by construction workers entering confined spaces during the construction works; and
- Preferential pathways may be created during the construction works resulting in migration of contaminants into the underlying groundwater aquifers or lateral migration via surface water run-off into surface water.

13.18 As required by the North West Cambridge Area Action Plan (2009), the Traveller's Rest Pit SSSI site will be safeguarded and protected as part of the Proposed Development to ensure that there is no adverse impact during the construction and operation of the Proposed Development. The measures that will be implemented to safeguard the site will be detailed in the Construction Environmental Management Plan (CEMP).

Phasing

13.19 The potential effects of ground conditions and land contamination has been considered against the phasing of the Proposed Development, taking into account the impacts of the construction activities, changes in site conditions and introduction of new sensitive receptors at each stage of the Proposed Development.

Completed Development

13.20 For the assessment in this ES chapter, the maximum development parameters have been used as the assessment scenario, as this is considered the worst-case scenario in relation to Ground Conditions and Land Contamination.

13.21 The potential impacts prior to implementation of mitigation measures during the operational phase of the Proposed Development, were identified in the scoping opinion as follows:

- Land contamination impacts on human receptors (future site users). Impacts may include direct contact with or ingestion of contaminated soil, or dust;
- Inhalation of hazardous gases or vapours, which may accumulate indoors and enclosed spaces by future site users;
- Direct contact of building infrastructures such as foundations and drinking water pipes with contaminated ground; and
- Accumulation of explosive concentrations of ground gas in enclosed spaces during the operational phase.

Assumptions and Limitations

13.22 The following assumptions and limitations apply to the assessment in this ES chapter.

- It is assumed that the third-party data used in this assessment is accurate;
- Detailed Ground Investigation (GI) works have not been undertaken at this stage which limits the amount of information available on which to base an assessment of potential contamination issues with regards to soils and controlled waters. Without this data the ability to quantify the potential risk to identified receptors is limited; and
- It is assumed that additional GI works will be undertaken as per the recommendations set out in **ES Volume 3, Appendix: Ground Conditions and Land Contamination – Annex 1**.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

13.23 This ES chapter identifies and assesses the effect of the Proposed Development on the identified ground conditions and land contamination receptors, during the construction and operational phases of the Proposed Development.

13.24 The overarching methodology is defined in **ES Volume 1, Chapter 2: EIA Methodology.** The sensitivity of the receptors and the magnitude of potential impacts during construction and operational phases have been adapted from the approach which is broadly based on the established methodology from the Highways England (2019) DMRB LA 109 Geology and Soils.

13.25 The values (sensitivity or importance) of a resource range from 'negligible' to 'high' and is dependent on the assessment area or features of importance and conservation value. The criteria for determining the value of a resource and typical examples for geology, soils, contamination, and groundwater are given in Table 13.1.

13.26 Resources are assessed against likely impacts, effects, and mitigation measures later in this ES chapter.

Table 13.1 Sensitivity to Change (Value) of Ground Condition Receptors and Attributes

Receptor Value / Sensitivity	Example of Definitions of Sensitivity for Different Receptors
High	• **Human health:** Very high sensitivity land use such as residential or allotments. • **Surface water:** Watercourse having a Water Framework Directive (WFD) classification shown in a River Basin Management Plan (RBMP) and Q95 ≥ 1.0 m^3/s. Site protected/designated under European Commission (EC) or UK legislation Special Area of Conservation (SAC), Special Protection Area (SPA), SSSI, Ramsar site, salmonid water)/ Species protected by EC legislation LA 108 (Highways England, 2020c). • **Groundwater:** Principal aquifer providing a regionally important resource and/ or supporting a site protected under EC and UK legislation LA 108 (Highways England, 2020c). Groundwater locally supports Groundwater Dependant Terrestrial Ecosystems (GWDTE) SPZ1. • **Geology:** Very rare and of international importance with no potential for replacement (e.g., United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Sites, UNESCO Global Geoparks, SSSIs and Geological Conservation Review (GCR) where citations indicate features on international importance). Geology meeting international designation citation criteria which is not designated as such. • **Built Environment:** Buildings or services prone to catastrophic damage..
Medium	• **Human health:** High sensitivity land use such as public open space. • **Surface water:** Watercourse having a WFD classification shown in a RBMP and Q95 • **Groundwater:** Principal aquifer providing locally important resource or supporting a river ecosystem. The groundwater is within a Source Protection Zone (SPZ) 2 which is defined by the Environment Agency as a "*400 day travel time of pollutant to source*". This has a 250m or 500m minimum radius around the source depending on the amount of water taken. • **Geology:** Rare and of national importance with little potential for replacement (e.g., geological SSSI, ASSI (Area of Special Scientific Interest), National Nature Reserves (NNR)). Geology meeting national designation citation criteria which is not designated as such.

Receptor Value / Sensitivity	Example of Definitions of Sensitivity for Different Receptors
	• **Built Environment:** High potential for accumulation of ground gas (i.e. site has been characterised as Characteristics Situation 4)[2] and potential for degradation of foundations is high if concrete specification does not account for aggressive ground conditions.
Low	• **Human health:** Medium sensitivity land use such as commercial or industrial. • **Surface water:** Watercourses not having a WFD classification shown in a RBMP and Q95 >0.001 m³/s. • **Groundwater:** Aquifer providing water for agricultural or industrial use with limited connection to surface water. This is within a SPZ3 which is defined by the Environment Agency as the "*area around a supply source within which all groundwater ends up at the abstraction point. This is the point from where the water is taken. This could extend some distance from the source point*". • **Built Environment:** High potential for accumulation of ground gas (i.e. site has been characterised as Characteristics Situation 3) and low potential for degradation of foundations if concrete specification does not account for aggressive ground conditions.
Negligible	• **Human health:** Low sensitivity land use such as highways and rail. • **Surface water:** Watercourses not having a WFD classification shown in a RBMP and Q95 ≤0.001 m³/s. • **Groundwater:** Unproductive strata. • **Geology:** Of local importance/ interest with potential replacement (e.g., non designated geological exposures, former quarries/ mining sites. • **Built Environment:** High potential for accumulation of ground gas (i.e. site has been characterised as Characteristic Situation 2) and low potential for degradation of foundations if concrete specification does not account for aggressive ground conditions.

Adapted from DMRB LA 109 Table 3.11 (Highways England, 2019) and DMRB LA 113 Table 3.70 (Highways England, 2020a) therein). As there are no sensitivity values given for the built environment within LA109 a sensitivity rating has been based on professional judgement.

Magnitude of Impact

13.27 The magnitude of potential impact upon geology and soils receptors considers the scale of the predicted change to baseline conditions and where there are potential pathways between an impact source / hazard and identified receptors. This takes into account the spatial scale of the impact, as well as its duration and reversibility (e.g., the impact magnitude may be moderated if the impacts are temporary rather than permanent; or are reversible rather than irreversible).

13.28 The magnitude of impact on a receptor ranges from 'negligible' to 'high'. The criteria for determining the magnitude of impact on a receptor are given in Table 13.2.

Table 13.2 Impact Magnitude - Ground Conditions and Land Contamination

Impact Magnitude	Impact on Receptors
High	• **Human health:** Significant contamination identified. Contamination levels significantly exceed background levels and relevant screening criteria (e.g., category 4 screening levels - SP1010 (Contaminated Land: Applications in Real Environments (CL:AIRE, 2014)). Potential for significant harm to human health. Contamination heavily restricts future use of land. • **Surface water:** Loss of regionally important public water supply. Loss or extensive change to a designated nature conservation site. Reduction in water body WFD classification. • **Groundwater:** Loss of, or extensive change to, an aquifer. Loss of regionally important water supply. Potential high risk of pollution to groundwater from routine runoff. Loss of, or extensive change to GWDTE or baseflow contribution to protected surface water bodies. Reduction in water body WFD classification. Loss or significant damage to major structures through subsidence or similar effects. • **Geology:** Loss of geological feature/ designation and/or quality and integrity, severe damage to key characteristics, features or elements. • **Built Environment:** Substantial damage. to buildings, services, etc.
Medium	• **Human health:** Contaminant concentrations exceed background levels and are in line with limits of relevant screening criteria (e.g., category 4 screening levels SP1010). Significant contamination can be present. Control/remediation measures are required to reduce risks to human health/ make land suitable for intended use. • **Surface water**: Degradation of regionally important public water supply or loss of major commercial/industrial/agricultural supplies. Contribution to reduction in water body WFD classification. • **Groundwater:** Partial loss or change to an aquifer. Degradation of regionally important public water supply or loss of significant commercial/ industrial/ agricultural supplies. Potential medium risk of pollution to groundwater from routine runoff. Contribution to reduction in water body WFD classification. Damage to major structures through subsidence or similar effects or loss of minor structures. • **Geology:** Partial or temporary loss of geological feature/ designation, potentially adversely affecting the integrity; partial loss of/ damage to key characteristics, features or elements. • **Built Environment:** Minor damage to buildings, services, etc.
Low	• **Human health:** Contaminant concentrations are below relevant screening criteria (e.g. , category 4 screening levels SP1010). Significant contamination is unlikely with a low risk to human health. Best practice measures can be required to minimise risks to human health. • **Surface water:** Minor effects on water supplies. • **Groundwater:** Potential low risk of pollution to groundwater from routine runoff. Minor effects on an aquifer, GWDTEs, abstractions and structures. • **Geology:** Minor measurable change in geological feature/ designation attributes, quality or vulnerability; minor loss of, or alteration to, one (may be more) key characteristics, features or elements. • **Built Environment:** Temporary or repairable amounts of damage to buildings, services, etc.
Negligible	• **Human health:** Contaminant concentrations substantially below levels outlined in relevant screening criteria (e.g., category 4 screening levels SP1010). No requirement for control measures to reduce risks to human health/ make land suitable for intended use. • **Surface water:** Risk of pollution from spillages <0.5%. • **Groundwater:** No measurable impact upon an aquifer and/or groundwater receptors and risk of pollution from spillages <0.5%. • **Geology:** Very minor loss or detrimental alteration to one or more characteristics, features or elements of geological feature/ designation. Overall integrity of resource not affected. • **Built Environment:** Easily repairable non-structural or cosmetic damage to buildings, services, etc.

Adapted from DMRB LA 109 Table 3.12, Table E/2.1 (Highways England, 2019) and LA 113 Table 3.71 (Highways England, 2020a) therein). As there are no magnitude of impacts given for the built environment within LA109 a sensitivity rating has been based on professional judgement.

Defining the Effect

13.29 In order to define the effect of the construction and operation of the Proposed Development on ground conditions and land contamination, the scale, nature, geographical extent and duration have been considered. Once the value (sensitivity) of each resource and the magnitude of the potential impact upon it are established, the significance (effect) matrix from Table 3.8.1 DMRB Sustainability & Environmental Appraisal, LA 104 Environment Assessment and monitoring (Highways England, 2020b) has been used to determine the significance (effect) of the potential impact on the receptor as reported in Table 3.7 of that document. These have been adapted and are presented as Table 13.3 and Table 13.4 to this chapter of the ES, respectively.

Table 13.3 Scale of Effect Matrix

Receptor Sensitivity	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

Adapted DMRB Table 3.8.1 LA 104 (Highways England, 2020b).

[2] *Risk classification framework as set out in Contaminated Land: A Guide to Good Practice: CIRIA Report 552 (2001)*

Table 13.4 Definition of Significance

Scale of Effect	Description
Major	These effects may represent key factors in the decision-making process. Major effects generally result from receptors of high sensitivity (such national importance or likely to be important considerations at a regional or district scale) and/ or impacts of a high magnitude (such as the loss of large areas of land). Major effects can also result from receptors of medium sensitivity combined with an impact of a high magnitude, or receptors of high sensitivity combined with an impact of a medium magnitude.
Moderate	These effects, if adverse, are likely to be important at a local scale and on their own could have a material influence on decision-making. Moderate effects generally result from receptors of medium sensitivity combined with an impact of a medium magnitude. Moderate effects can also result from receptors of low sensitivity combined with an impact of a high magnitude, or receptors of high sensitivity combined with an impact of a low magnitude.
Minor	These effects may be raised as local issues and may be of relevance in the detailed design of the project but are unlikely to be critical in the decision-making process. Minor effects generally result from receptors of medium sensitivity combined with an impact of a low magnitude, or receptors of low sensitivity combined with an impact of a medium magnitude.

13.30 The methodology described above has been used to assess the significance for the three principal stages of the project, namely:

- Enabling, Demolition and Construction;
- Interim; and
- Completed Development.

13.31 Where possible, each effect has been classified both before and after mitigation measures have been applied. Effects remaining after mitigation has been applied are referred to as 'residual effects' and are detailed in this ES chapter.

13.32 The geographical extent of impacts is considered in terms of the following:

- On-site: within the red line boundary of the Proposed Development;
- Adjacent: within the immediately surrounding area of the Proposed Development – likely to touch the boundary or be within approximately 100m;
- Local: within the surrounding area of the Proposed Development, covering the area north-west of Cambridge;
- Regional: within the wider East/East Midlands area; and
- National: within the country of England.

13.33 The duration of the effect is defined as either permanent or temporary and if temporary they may be short, medium or long term. An effect is considered permanent if, without intervention, it would not return to its original state. The temporary effects are further categorised as short term, medium term or long term. For example, effects that are generated as a result of the enabling, demolition and construction works (i.e. those that last for this set period of time) are classed as 'temporary'; these maybe further classified as either 'short term' or 'medium-term' effects depending on the duration of the enabling, demolition and construction works that generate the effect in question. Effects that result from the completed and operational Proposed Development are classed as 'permanent' or 'long-term' effects.

13.34 Whether impacts are direct or indirect is determined by if the impact occurs without any intervention (i.e. from the direct contact of a construdction worker with contaminated soils) or whether there is an intervention which may be a link, transfer or pathway between the source and receptor (i.e. plant uptake of contaminants through soils).

Categorising Likely Significant Effects

13.35 Effects that are identified as being moderate or major adverse/beneficial are classified as significant effects.

BASELINE CONDITIONS

13.36 The site covers an area of 114 hectares, with a roughly triangular shape and is defined by the red line boundary shown in Figure 1.1 of **ES Volume 1, Chapter 1: Introduction**. The topography of the site broadly rises to the east with elevations of approximately 14m Above Ordnance Datum (AOD) in the west and 28m AOD in the far east of the site.

13.37 There are currently 12 major stockpiles across the site remaining from construction of Phase 1 of the 2013 OPP. These comprise approximately 205,000m^3 of gault clay and 72,500m^3 of mixed topsoil and subsoil.

Geology

13.38 The British Geological Survey (BGS) 1:50 000 scale geological map Sheet 188 (Cambridge)[3] and BGS Onshore GeoIndex viewer[4] have been reviewed to assess the underlying geology at the site, as shown in Figure 13.1.

13.39 The BGS mapping indicates that the site is underlain by the following geological sequence:

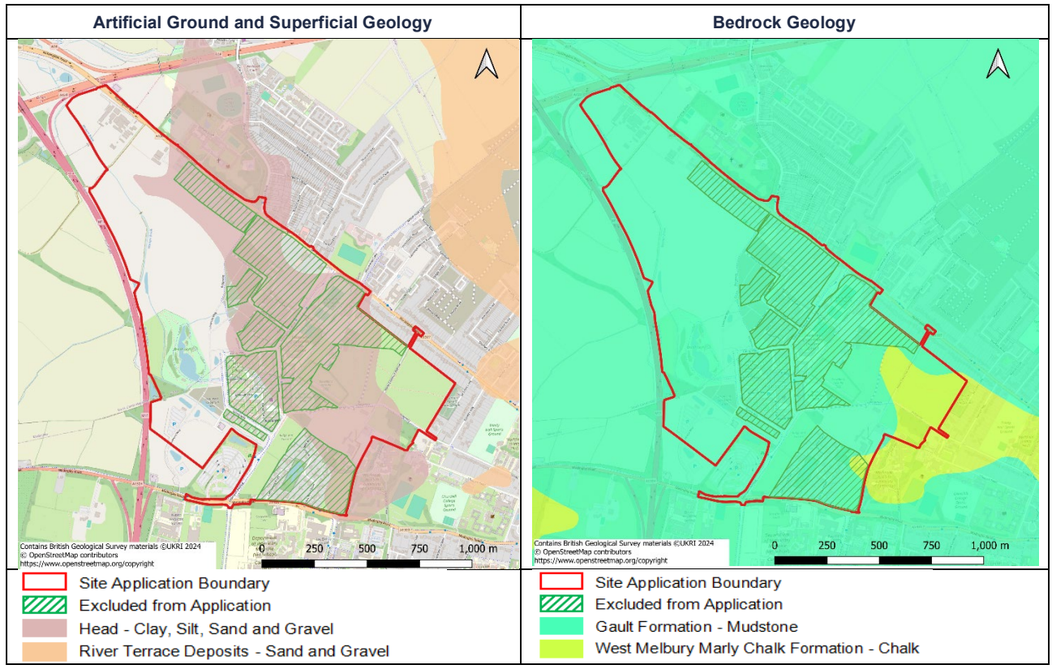
- Artificial Deposits / Made Ground are not mapped within the site boundary. However, Made Ground associated with the historical and current development in the area is likely to be present on-site;
- The site is underlain along the majority of the eastern part of the site by Head deposits. River Terrace Deposits are shown to be present off-site to the east; and
- Gault Formation (Mudstone) bedrock is present across the site, with the exception that the West Melbury Marly Chalk Formation is shown in a small area in the south-east of the site.

13.40 There are no mapped faults or linear geological features within the site boundary.

[3] *BGS, "1:50 000 - England and Wales Sheet 188 - Cambridge - Solid and Drift," 1981.*

[4] *British Geological Survey (BGS) GeoIndex. [Online]. Available: https://mapapps2.bgs.ac.uk/geoindex/home.html [Accessed May 2025]*

Figure 13.1 Published Geology (Source BGS)



13.41 The BGS maintains an archive of historical exploratory hole records throughout the UK. AECOM has searched the database and those which are considered to provide useful information on the ground profile at the site are presented in Table 13.5. This information alongside a corresponding location plan can be found in the PRA within **ES Volume 3, Appendix: Ground Conditions and Land Contamination – Annex 1** (Reference Figure 3.2).

Table 13.5 Historical BGS Exploratory Hole Logs

Borehole reference NGR Distance from the Site Date	Stratum	Description	Depth to Top of Stratum (m below ground level (bgl))	Thickness (m)
TL46SW61 541800, 261200 On-site (Data Quality House) 1971	Topsoil	-	Ground Level	0.15
	Superficial deposits	Firm to stiff blue/grey mottled fissured silty clay with brown staining on partings	0.15	2.60
		Stiff blue/ grey mottled fissured silty clay	2.75	5.25
		Stiff to very stiff blue-grey fissured silty clay *Groundwater strike at 15.95m bgl*	8.0	10.00
TL46SW248 541928,261185 On-site (Data Quality House) 2008	Made Ground	Dark brown slightly sandy gravelly clay with rare cobbles. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of chert, and fragments of brick, clinker, concrete, 'tarmac' and ceramic tile. Cobbles are subangular of 'tarmac'.	Ground level	0.59
	Superficial Deposits	Stiff fissured orange, brown clay. Fissures are very closely to closely spaced, sub horizontal, randomly orientated, undulating with 2-4mm or dark orange or dark grey discoloration. Rare rootlets.	0.59	0.83
		Stiff fissured light blue grey clay. Fissures are very closely to closely spaced sub horizontal randomly orientated undulating with 2-4mm or dark orange or dark grey discoloration. Rare rootlets.	1.42	4.58
TL46SW210 541970,261150 On-site (Data Quality House) 2005	Made Ground	Reinforced concrete over plastic membrane.	Ground level	0.15
		Dark grey fine-medium gravel sized ash and clinker fragments with coarse gravel-boulder sized concrete fragments.	0.15	0.25
		Brown/ orange brown and light grey silty clay with fine gravel-sized clinker fragments and fine medium flint gravel with roots and rootlets	0.40	0.40
	Superficial Deposits	Firm blue gey silty clay with occasional orange, brown silt pockets and rare subangular fine flint gravel	0.80	1.20
		Firm-stiff blue grey silty clay with occasional white selenite crystals and orange, brown silt pockets. Groundwater seepage recorded at 1.10m bgl	2.00	2.00
TL46SW212 541900,261140 On-site (Data Quality House) 2005	Made Ground	Grass over dark brown slightly clayey silty gravelly sand with occasional roots and rootlets	Ground level	0.15
		Soft light grey silty clay with occasional subangular-subrounded fine-coarse flint gravel and rare fine-coarse gravel sized brick fragments	0.15	0.55
	Superficial Deposits	Firm-stiff light grey and orange, brown silty clay	0.70	0.10
TL46SW215 541920,261130 On-site (Data Quality House) 2005	Made Ground	Concrete	Ground level	0.10
		Slightly sandy silty clay with angular-subrounded fine-medium flint gravel and fine-coarse brick fragments	0.10	0.70
	Superficial Deposits	Stiff grey silty clay with occasional brown silt pockets, fine-medium chalk gravel, rare subrounded medium flint gravel and very rare shell fragments	0.80	0.40
		Stiff light grey and orange, brown silty clay with subangular fine flint gravel	1.20	0.60
		Stiff light orange, brown silty clay with rare selenite crystals	1.80	1.20
TL46SW216 541910,261120 On-site (Data Quality House) 2005	Made Ground	Concrete	Ground level	0.07
		Orange, brown silty fine-medium sand with fine-coarse gravel sized concrete fragments	0.07	0.63
	Superficial Deposits	Stiff grey, orange and brown silty clay with white and cream pockets of silt	0.70	1.50
		Stiff brown silty clay with pockets of selenite crystals	2.20	0.80
TL46SW211 541870,261100 On-site (Data Quality House) 2005	Made Ground	Vegetation over brown slightly clayey silty-gravelly sandy topsoil with occasional fine-coarse gravel sized brick fragments and roots and rootlets	Ground level	0.10
		Very soft dark brown slightly sandy silty gravelly clay with occasional fine-coarse gravel sized brick fragments	0.10	0.30
		Soft-firm light grey and orange, brown silty clay with occasional subangular-subrounded fine-coarse flint gravel and rare fine-coarse grave sized brick fragments	0.40	0.35
	Superficial Deposits	Stiff orange brown and light grey silty clay with occasional subrounded siltstone fragments and very rare flint and gravel.	0.75	1.25
		Stiff light brown silty clay with orange, brown pockets of clay	2.00	0.50
		Stiff light brown silty clay with occasional pockets of selenite crystals *Groundwater seepage recorded at 0.70m bgl*	2.50	0.50

Borehole reference NGR Distance from the Site Date	Stratum	Description	Depth to Top of Stratum (m below ground level (bgl))	Thickness (m)
TL46SW214 541880,261040 On-site (Data Quality House) 2005	Topsoil	Firm brown slightly sandy silty clayey topsoil with subangular-subrounded fine flint gravel and fine-medium roots and rootlets	Ground level	0.20
	Superficial Deposits	Stiff light brown silty clay with some subangular-subrounded fine-medium flint gravel and occasional fine roots and rootlets	0.20	0.60
		Firm light brown and light grey silty clay with occasional white silt pockets, rare subangular fine flint gravel and rare fine rootlets	0.80	0.30
		Stiff light grey silty clay with orange, brown silt pockets and very rare subangular-subrounded fine gravel sized siltstone	1.10	0.90
		Stiff light grey to very light brown silty clay	2.00	1.00
TL46SW213 541970,260990 On-site (Data Quality House) 2005	Topsoil	Brown slightly sandy silty clayey topsoil with fine-medium roots and rootlets	Ground level	0.20
	Superficial Deposits	Firm light brown silty clay with occasional subangular-subrounded fine white siltstone. Subangular-subrounded fine-medium flint gravel and very rare roots and rootlets	0.20	0.60
		Stiff light grey and orange, brown silty clay with very rare rootlets	0.80	1.20
TL46SW135 542560,260410 On-site (Ridgeway Village)	Topsoil	Greyish brown, stony, sandy, clay loam	Ground level	0.30
	Superficial Deposits	Sandy gravel fine with coarse, angular to subangular, white, yellow and grey flint with fine rounded to well-rounded chalk, with some ironstone, quartz and limestone and occasional sandstone, quartzite and phosphatic nodules.	0.30	2.30
		Firm grey clay Groundwater struck at 1.8m bgl	2.60	3.00
TL45NW115 543080,259530 On-site (School of Veterinary Medicine)	Topsoil	Soil and gravel mixture	Ground level	1.22
	Superficial Deposits	Sandy mixture	1.22	0.15
		Fine sand	1.37	0.31
		Gravel	1.68	0.38
		Sandy marl	2.06	0.23
		Marl	2.29	1.06

Soils and Soil Chemistry

13.42 Information obtained from Soilscapes[5] describes the soils at in the north-western, western and southern areas of the site as '*Lime-rich loamy and clayey soils with impeded drainage*' (Soilscapes 9). Soils described as '*Freely draining lime-rich loamy soils*' (Soilscapes 5) are mapped in the central and southern portions of the site. Soils described as '*Shallow lime-rich soils over chalk or limestone*' (Soilscapes 3) are mapped in the far eastern portions of the site.

13.43 The BGS Soil Chemistry datasets provide indicative information on regional concentrations of five potentially harmful elements (PHEs): arsenic (As), cadmium (Cd), chromium (Cr), nickel (Ni) and lead (Pb) in soil, as presented within the Groundsure Report[6]. Elevated concentrations of these PHEs can exist because of natural geological conditions or possible anthropogenic contamination. The following BGS estimated soil chemistry levels are attributed to the vicinity of the site based on the geometric mean concentrations of available data (presented in Table 13.6).

Table 13.6 Estimated Soil Chemistry

Potentially Harmful Element	Estimated Geometric Mean Concentration (mg/kg)
Arsenic	15
Cadmium	<1.8
Chromium	40 – 90
Lead	<100
Nickel	15 – 60

13.44 Agriculture and soils are covered in detail in **ES Volume 1, Chapter 12: Land Take and Soils (Agriculture).**

Ground Stability Records

13.45 Table 13.7 shows the variable risk of ground stability hazards across the site, taken from the Groundsure Report[6].

Table 13.7 Ground Stability Records

Hazard Type	Hazard Potential
Collapsible Ground Stability	Very low
Compressible Ground Stability	Negligible
Ground Dissolution Stability	Negligible to very low
Landslide Ground Stability	Negligible to low
Running Sand Ground Stability	Negligible to very low
Shrinking or Swelling Clay Ground Stability	Negligible to moderate

13.46 Although the Groundsure Report[6] noted that the potential for landslide ranges from negligible to low, the information from BGS[4], indicates that "*Gault Formation has both ancient and recent landslides of shallow translational type with rotational elements at the back scarp and flows at the toe region. Multiple retrogressive rotational failures occur on some slopes...The formation is prone to shrink–swell processes due to significant amounts of smectite clay in parts of its sequence*."

Mining and Mineral Extraction

13.47 Three records of quarrying and mining operations have been identified within 250m of the site:

- On-site: Gravel Hill Farm Gravel Pit, sand and gravel, listed as ceased/closed by the operator;
- 32m north: Bunker's Hill Gravel Pit, sand and gravel, listed as ceased/closed by the operator; and
- 100m south-east: University Observatory Gravel Pit, sand and gravel, listed as ceased/closed by the operator.

13.48 Numerous unspecified pits, ground workings and heaps are noted on-site to 123m south-east of the site dating from as early as 1927.

13.49 The Groundsure Report[6] and the Mining Remediation Authority Interactive Viewer[7] indicate that the site is not located within a Coal Mining Reporting Area, as defined by the Mining Remediation Authority.

13.50 No underground non-coal mining activities were reported to have occurred within 250m of the site.

[5] *Cranfield Environment Centre (CEC), "LandIS - Soilscapes Viewer," [Online]. Available: https://www.landis.org.uk/soilscapes/ [Accessed May 2025]*

[6] *Groundsure Enviro+Geo Insight Report. 2024. North West Cambridge.*

[7] *The Coal Authority, "Interactive Map," 2025. [Online]. Available: https://mapapps2.bgs.ac.uk/coalauthority/home.html [Accessed May 2025]*

Radon

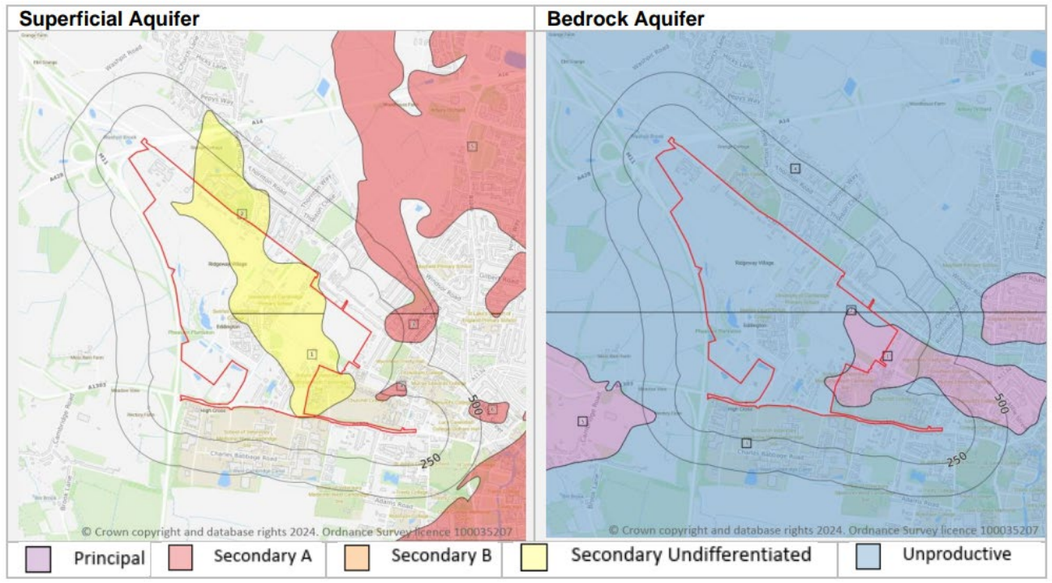
13.51 Based on data provided in the Groundsure Report[6], as well as online mapping by UKRadon[8], the site is located within an area where it is estimated that less than 1% of properties are affected by radon. As a result, no radon protection measures are likely to be required.

Hydrogeology

Aquifer Classification

13.52 The Environment Agency's Groundwater Protection Policy adopts aquifer designations that are consistent with the Water Framework Directive. Definitions of the various aquifer types can be found on the Environment Agency section of the gov.uk website. Extracts of the aquifer designations for both the superficial deposits and bedrock from the Groundsure Report[6] are shown in Figure 13.2.

Figure 13.2 Aquifer Designations (Source: Groundsure Report GS-P22-D3Z-URC-Z1V)[9]



13.53 The superficial aquifer beneath the site (Head – clay, silt, sand and gravel deposits) is classified as a Secondary Undifferentiated Aquifer, defined as '*assigned where it is not possible to attribute either category A or B to a rock type. In general, these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type*'.

13.54 The Gault Formation bedrock located in the northern, western, southern and central portions of the site is classified as unproductive aquifer, defined as 'rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow. The West Melbury Marl Chalk Formation bedrock located in the south-eastern portion of the site, is classified as a Principal Aquifer, defined as *'layers of rock or drift deposits that have high intergranular and/or fracture permeability, meaning they usually provide a high level of water storage and transmission. They may support water supply and/or river base flow on a strategic scale*'.

Groundwater Vulnerability

13.55 The Environment Agency's Combined Groundwater Vulnerability Map of the area[10] and the Groundsure Report[6] show that groundwater vulnerability beneath the site is classified 'high' in relation to both the bedrock aquifer in the far north-eastern portion of the site and superficial aquifer eastern and central northern portions of the site. 'High' vulnerability indicates high leaching soils and the absence of low permeability superficial deposits, i.e. areas are able to easily transmit pollution to groundwater. Unproductive aquifers are present in the south-western and western portions of the site.

Source Protection Zones

13.56 The site does not lie within a SPZ and there are no SPZ's within 1km of the site.

Licensed Groundwater Abstractions

13.57 Four groundwater abstractions have been identified within 1km of the site, all are assumed to be active unless otherwise stated:

- 702m north-east: National Institute of Agricultural Botany for spray irrigation;
- 717m north: Rector of Girton for general farming and domestic;
- 960m south-east: Gilber-Ash Limited for dewatering; and;
- 999m east: Arundel House Hotels Ltd. For large garden watering.

13.58 There is no potable groundwater abstraction within 1km of the site, and the site is not located within any Drinking Water Safeguard Zone with respect to groundwater[10].

Risk of Flooding from Groundwater

13.59 According to the Groundsure Report[6], the risk of flooding from groundwater at the site (i.e. where the water table may rise to be above the ground surface and/or within underground structures such as basements), based on a 1 in 100-year flooding event is as outlined here:

- Low risk identified in the areas within the footprint of the Head superficial deposits
- Negligible risk identified in the areas where the superficial deposits are absent

Groundwater Depth and Flow Direction

13.60 According to the BGS borehole logs and historical reports made available to AECOM, groundwater levels in the surrounding area were recorded as follows:

- Based on BGS exploratory hole records groundwater was encountered near the site between approximately 1.70m bgl (TL46SW211) and 15.95m bgl (TL46SW61) (within the superficial clay, silt, sand and gravel deposits);
- URS (2011) ground investigation: groundwater encountered during drilling within the shallow gravel deposits between 0.90m bgl and 3.80m bgl. Groundwater was encountered within the Gault Clay on one occasion at 19.45m bgl, rising to 17.95m bgl in BH101;
- URS (2013) Phase 1 Desk Study with reference to URS (2010) ground investigation: groundwater was encountered during drilling within the shallow gravel deposits at two locations, WS214 at 0.9m bgl and WS217 at 2.2m bgl;

[8] *UK Health Security Agency, "UK Radon," UK Radon, [Online]. Available: https://www.ukradon.org/information/ukmaps [Accessed May 2025]*

[9] *The site boundary shown represents the Groundsure Report site data search extent. This is not the planning application boundary. For the planning application boundary, refer to Figure 1.2 of* ***ES Volume 1, Chapter 1: Introduction.***

[10] *Defra MAGIC Map. 2025. Available https://magic.defra.gov.uk/MagicMap.html [Accessed May 2025]*

- URS (2013) Phase 2 ground investigation report: groundwater encountered in boreholes and trial pits ranged from 0.86m bgl to 2.8m bgl; and
- AECOM (2019) Phase 2 ground investigation report: groundwater encountered in boreholes and trial pits was 3m bgl.

13.61 No information on groundwater flow direction specifically beneath the site is available.

13.62 However, based on regional topography and the location of surface water features, shallow groundwater is considered most likely to potentially flow towards the west and south-west across most of the site, towards Washpit Brook.

Hydrology

Surface Water Courses and Drainage

13.63 The most prominent hydrological feature on-site is the Washpit Brook, a watercourse which runs from east to west adjacent to the lake north of the Madingley Road Park and Ride and Pheasant Plantation. The brook then runs due north, parallel to the M11 until it leaves the site near the A14 junction onward to Girton.

13.64 Brook Leys, a small lake is located on-site to the east of the Pheasant Plantation and to the west of Swirles Court. The location of these features can be seen on Figure 3.2 in the PRA (**ES Volume 3, Appendix: Ground Conditions and Land Contamination – Annex 1**).

13.65 There are surface water drainage swales associated with the sitewide sustainable urban drainage network.

13.66 Numerous small lakes and ponds are located in the southern portions of the site to the south of Swirles Court and east of the School of Veterinary Medicine.

13.67 Table 13.8 summarises the pertinent surface water quality information available associated with the site.

Table 13.8 Surface Water Quality[6]

Surface Water Feature	General Quality Assessment (GQA) (Chemical) (Biological)	Distance (m)	NGR, Direction
Bin Brook	Ecological – Moderate Chemical – Fail	521m	South-East
Cam	Ecological – Moderate Chemical – Fail	781m	South-East
Old West River	Ecological – Moderate Chemical – Fail	1209m	North-West

Licensed Surface Water Abstractions

13.68 Based on the Groundsure Report[6], one active licensed surface water abstraction is located within 1km of the site. This is located 647m to the south-east: (Robinson College for heat pump usage from Bin Brook water body).

Risk of Flooding from Surface Water

13.69 According to the Environment Agency flood maps included within the Groundsure Report[6], the site is within Flood Zone 1 except for a small area in the northern extent of the site, where Flood Zone 2 associated with the Washpit Brook is present. Flood Zone 1 has low probability of flooding, with less than 0.1% chance of flooding from rivers or sea in any year. Flood Zone 2 are locations with medium probability of flooding, that there between 1% and 0.1% chance of flooding from rivers in any year.

Sensitive Land Uses

13.70 One SSSI is located on-site (Traveller's Rest Pit). Traveller's Rest Pit SSSI is located in the area south of Huntingdon Road (A1307) and north of Garrod Street. The indicative boundary of the site is also identified in the North West Cambridge Action Plan (2009). According to the North West Cambridge Action Plan, the Traveller's Rest Pit is a Geological Conservation Review site, which provides a unique exposure of fossiliferous cold stage gravels, sands and silts of a high-level terrace (Observatory Gravels) of the River Cam.

13.71 Two areas of adopted Green Belt Zone are located on-site and two within 500m, located from 223m north-east and 454m south-east of the site.

13.72 No other sensitive land uses have been identified within 1km of the site.

Historical and Planned Development

13.73 Historical Ordnance Survey (OS) maps and aerial photographs of the site and the wider environs were provided in the Groundsure Report (scales 1:1,250, 1:2,500, 1:25,000, 1:500, 1:1,056, 1:10,560, and 1:10,000)[6] and from Google Earth Pro[11] between the dates of 1886 to 2024.

13.74 From 1886, the site consisted of mostly unused open land and farmland, with various farms and buildings present across the site. Washpit Brook was present in its current configuration in the west of the site, Bunker's Hill was present in the north, buildings associated with Girton College were located along the northern boundary, Gravel Hill Farm was present in the south-eastern corner, Pheasant Plantation was in the west and Traveller's Rest was present along the north-eastern boundary. Various farms, pits and residential buildings surrounded the site.

13.75 From 1901, an expansion of the Girton College buildings had occurred, gravel pits were located in the east and a nursery was in the north-eastern corner of the site. From 1924, a small pond and tree plantation were located in the north-western portion of the site, further expansion of Bunker's Hill, Girton College and residential properties around Traveller's Rest occurred and a meteorological station wand the Poultry Nutrition Institute Farm was located in the east. From 1938, residential properties were present along the northern boundary of the site, along Huntingdon Road. Further academic and residential expansion occurred on-site from 1967, including the construction of a cattle breeding centre, laboratories and School of Agriculture field station in the north-east, an animal research station in the north-west and an Entomological field station in the east. A garage was constructed 10m north of the northern boundary and construction on the M11 began.

13.76 Minor expansion continued both on and off site from 1979, with increased residential properties, academic buildings and roads. No significant changes were observed from 1999 to 2013, when clearing of the site began for future construction of Phase 1 which continued until 2024. From 2016, Brook Leys is present to the west of Phase 1.

Unexploded Ordnance Risk

13.77 The Zetica bomb risk maps show the site is in a low bomb risk area. Based on this a Preliminary Desk Study Assessment (PDSA) has been obtained and is shown in **ES Volume 3, Appendix: Ground Conditions and Land Contamination – Annex 1**.

[11] *Google Earth Pro, [Online]. Available: https://earth.google.com/web/ [Accessed May 2025]*

Regulated Processes

13.78 Table 13.9 summarises information on regulated processes within 250m of the site obtained from the Groundsure Report[6].

Table 13.9 Summary of Regulatory Information

Subject	Distance from Site		Details
	On site	0-250m	
Licenced Pollutant Release	-	1	• One entry 1m north-east of the site for BP Girton for unloading of petrol into storage at service station.
Licenced Discharges to Controlled Waters	1	-	• One entry on-site for North West Cambridge Site Wide Infrastructure Contract (SWIC) for sewage discharges into Washpit Brook. Permit number: EPRBB3499WF effective 22/08/2014 revoked 06/10/2023.
Pollutant Release to Public Sewer	1	2	• One entry on-site for University of Cambridge Veterinary School. Permission reference: SCE0139C2. First received date: 07/01/2014; Last received date: 08/10/2016; Status: Effective. • One entry 70m south-east for University of Cambridge Cavendish Laboratory. Permission reference: BQ2502. First received date: 01/06/2003; Last received date: 01/01/2018; Status: Effective. • One entry 142m south for University of Cambridge Veterinary School. Permission reference: CA4447. First received date: 01/07/2009; Last received date: 01/01/2018; Status: dead (Post Determination).
List 1 Dangerous Substances	-	2	• One entry 173m south for University of Cambridge Veterinary School for release of mercury. Status active.
List 2 Dangerous Substances	2	5	• One entry on-site for University Biomedical Support Science and one entry for Wheelie Fresh Bins Limited for pH. Status not active. • One entry 12m north-east for Pace Petroleum (Girton) for pH. Status not active. • One entry 50m south-east for Alder & Allan Limited for release of Zinc into Ten Mile River. Status active. • Two entries 123m south-west for Schlumberger Cambridge Research Ltd for pH. Status one active one not active. • One entry 203m east for Niab for pH. Status not active.
Pollution Incidents to Controlled Waters	1	2	• One Pollution Incident noted on-site from oils and fuel (Category 3 minor incident). • Two Pollution Incidents noted within 250m of the site – 12 m south-east from oils and fuel (Category 3 minor incident) and 224m north-west from oils and fuel (Category 3 minor incident).
Radioactive Substance Authorisations	1	21	• One entry on-site for University of Cambridge. • One entry 3m south for the British Antarctic Survey for the keeping and use of radioactive materials. • Five entries 33m south-west for the British Antarctic Survey for the disposal of radioactive waste. • One entry 101m south-west for the British Antarctic survey. • Two entries 129m south-east for the National Institute of Agricultural Botany Plant Pathology for the keeping and use of radioactive materials. • Five entries 130m south-west for the University of Cambridge Waste Store for the disposal of radioactive waste. • Six entries 156m south for the University of Cambridge South Sites for the disposal and keeping and use of radioactive wastes and materials.

Licensed Waste Management Facilities

13.79 According to the Groundsure Report[6], a historical landfill is present on-site at Cambridge University Farm, licence holder: M Dickerson Limited for inert wastes last recorded 30/04/1986.

13.80 With reference to the above data there are no recorded licensed waste management facilities within 250m of the site.

Industrial Land Use

13.81 The Groundsure Report[6] records various historical and current features which are indicative of industrial land uses, including contemporary trade directory entries. Features identified within 250m of the site, which are considered to indicate activities with the potential to have caused contamination at the site are summarised in Table 13.10.

Table 13.10 Potentially Contaminative Industrial Land Use on-site and within 250m of the Site

Subject	Location	Details
Contemporary Trade Directory Entries	117m E	NIAB Agricultural Contractors
	28m NE	Haywards of Cambridge Motoring
	17m NE	Girton Service Station Vehicle Cleaning Services
Fuel Station Entries	17m NE	Girton Service Station
	28m NE	BP Service Station
Energy Features	On-site	Electricity Sub Stations 7 No. entries Telephone Exchange Telecommunication Mast
	5m SE – 74m SW	Telecommunication Mast
	6m SW – 235m SE	Electricity Sub Station
Infrastructure and Facilities	95m SW	Polysolar electric vehicle charging station
Industrial Features	On-site	Silo
	On-site	Foul water pumping station
	27m NW	Chimney
	27m NW – 38m SW	Gas Valve Compound
	38m SE	Wind Turbine
	42m SE – 227 NE	Multiple tanks (generic)

Previous Ground Investigations

URS North West Cambridge Geotechnical Report (August 2011)

13.82 A geotechnical report for the North West Cambridge site was prepared by URS for the University of Cambridge. The report was commissioned to assess the site geology and ground conditions at the site to give advice on geotechnical considerations and assess any geotechnical risks to the proposals

13.83 An intrusive ground investigation was designed by URS and Brownfield Solutions Ltd (BSL) were commissioned to undertake the works under part time supervision of URS. 11 cable percussion (BH101 – BH110 and BH110A) boreholes and 19 Window samples (WS201- WS205 and WS207 – WS220) were drilled to provide preliminary information on the geotechnical conditions across the site and to allow assessment of groundwater to be undertaken.

13.84 Made Ground was encountered locally overlying the natural ground to a maximum depth of 3.4m (WS202). Head gravels and observatory gravels were encountered in the central and northern part of the site to a maximum depth of 5.0m (BH306).

13.85 Groundwater was encountered during drilling within the shallow gravel deposits between 0.90m bgl and 3.80m bgl. Groundwater was encountered within the Gault Clay on one occasion at 19.45m bgl, rising to 17.95m bgl in BH101.

URS North West Cambridge Geological Site Management Plan (May 2012)

13.86 A Geological Site Management Plan for the North West Cambridge site was prepared by URS for the University of Cambridge to ensure the geology currently conserved at the Traveller's Rest Pit SSSI was not damaged during construction works for the 2013 OPP.

13.87 Observatory Gravels were present within the Traveller's Rest Pit SSSI containing non-marine cold-water mollusc fossils and ice wedge casts. The gravels also yielded fossil remains of large vertebrates (red deer and horse) and Palaeolithic worked flints.

13.88 A 10m buffer zone of the Traveller's Rest Pit SSSI was established prior to the commencement of construction works for Phase 1. A biodiversity strategy was put in place to enhance nature conservation within the site and to control and limit disturbance to areas to nature conservation interest. An archaeology and built heritage management plan was put in place as there was a potential for archaeological remains to be found in the observatory gravels.

URS North West Cambridge Phase 1 Development. Phase 1 Geo-Environmental Desk Study Report (April 2013)

13.89 A Phase 1 Desk Study for the North West Cambridge site was prepared by URS for the University of Cambridge, which also includes data from a previous 2010 URS ground investigation. The report was prepared in support of the 2013 OPP for the development of Phase 1 to discharge condition 49.

13.90 Topsoil was recorded within all boreholes, with no Made Ground encountered. Drift deposits underlying the topsoil consisted of sand and gravels indicative of shallow head deposits and observatory gravels in the north of the site these were between 1 – 5m thick and less than 1m thick in the southern section of the site. Bedrock consisted of Gault Clay comprising of stiff to very stiff (becoming hard) grey/brown occasionally mottled orange, brown desiccated clay with occasional calcareous nodules and locally occasional shell fragments.

13.91 Groundwater was encountered during drilling within the shallow gravel deposits at two locations, WS214 at 0.9m bgl and WS217 at 2.2m bgl. URS concluded that the inconsistent presence of shallow groundwater and variation in relative levels across the site, suggested that encountered groundwater was largely indicative of perched water above the Gault Clay.

13.92 The ground investigation was undertaken across Phase 1 of the 2013 OPP. Soil samples were analysed for a suite of metals, speciated Polycyclic Aromatic Hydrocarbons (PAHs), Total Petroleum Hydrocarbons (TPH) CWG, phenols, pH, sulphur, sulphate, and total organic carbon. The following provides a summary of the results:

- Soil laboratory results were compared to the Soil Guideline Values (SGV's) for a residential with plant uptake land-use;
- Analytical results for all soil samples tested from within Phase 1 site were below adopted assessment criteria. No hydrocarbons, polychlorinated biphenyls (PCBs) or pesticides were identified above laboratory detection limits;
- Groundwater laboratory results were compared to the Environmental Quality Standards (EQS) for freshwaters. Where EQSs were not published Surface Water Abstraction Classification and Drinking Water Standards were used;
- Groundwater assessment within the wider North West Cambridge site identified elevated nitrate, however, URS concluded this was likely to be a result of a high background level since the site was located in a nitrate vulnerable zone. Selenium exceeded the EQS in one sample, but further assessment using Washpit Brook as a receptor, identified a low risk to Controlled Waters; and
- Two rounds of ground-gas monitoring of the 10 cable percussion installations and one window sample installation identified a maximum carbon dioxide reading for the wider North West Cambridge site of 1.3%. No methane was detected in any installations and no gas flow was detected.

URS North West Cambridge Phase 1 Development. Phase 2 Geo-Environmental Interpretive Report (June 2013)

13.93 A Phase 2 Geo-environmental Assessment for the North West Cambridge development site was prepared by URS for the University of Cambridge (June 2013). This report provided a summary of the ground investigation works and an interpretation of the results. The report was to support the Phase 1 development works.

13.94 BSL carried out the intrusive investigation works under the direction of URS. Seven cable percussion (BH401 to BH407) boreholes were drilled to assess groundwater on-site and 38 trial pits (TP401 to TP438) were progressed to assess soil contamination on-site.

13.95 Borehole records show a significant variation in the thickness of strata across the site comprising of Topsoil, Made Ground, Clay, Sand and Gravel. Table 13.11 shows the summary of the strata encountered across the site:

Table 13.11 Summary of Encountered Strata

Strata	Top of Strata Range (m bgl)	Depth to Base Range (b bgl)	Thickness Range (m)
Topsoil	0.00 - 0.00	0.20 - 0.65	0.20 - 0.65
Made Ground	0.00 - 0.00	0.10 - 1.00	0.10 - 1.00
Head Deposits	0.00 - 2.90	0.20 - 5.00	0.20 - 4.60
Gault Clay	0.20 - 3.30	1.00 - 5.00	0.50 - 4.60

13.96 Made Ground was encountered at eight locations. In the main part of the Phase 1 development, (TP408, TP410M TP411 and TP429) Made Ground consisted of reworked natural deposits, described as gravelly clay, locally cobbly or silty. In TP433, brick fragments were identified in shallow soils and evidence of scrap vehicle materials were noted at 0.70m. Made Ground was identified in four trial pits (TP43 – TP437) to the east of the main Phase 1 development, including brick, concrete and rare coal fragments.

13.97 Groundwater encountered in boreholes and trial pits ranged from 0.86m bgl to 2.8m bgl.

Ground Investigation Results

13.98 URS derived Generic Assessment Criteria (GACs) from various sources including the Environment Agency (EA), Land Quality Management :Ltd (LQM)/ Chartered institute of Environmental Health (CIEH) and Contaminated Land: Applications in Real Environments (CLAIRE). Assessment was based on the end use for the site being residential development with plant intake.

Soil Results

- Maximum concentrations for Arsenic (TP434 0.4m bgl) was slightly greater than the corresponding GAC;
- Concentrations for TPH were below the method detection limit;
- TP402 (0.7m bgl) and BH407 (3m bgl) recorded slightly elevated concentrations of benzo(a)pyrene of 0.87 mg/kg and 1.3 mg/kg in comparison to the GAC (0.83 mg/kg); and
- 60 samples were sent for laboratory screening for asbestos. No asbestos was recorded.

Groundwater Results

- Concentrations of selenium in BH401 and BH404 were greater than the associated screening criterion. Concentrations of calcium in BH404 and BH407 were elevated in comparison to the screening criterion. Potassium in BH403, BH404, BH405 and BH407 were higher than the Freshwater EQS. In BH404 sulphate concentration was higher than the screening criteria;

- In 1999 (noted from a previous investigation that has not been made available to AECOM) a diesel spillage was noted on the concrete hardstanding – a hydrocarbon odour was noted in the vicinity, but no sampling conducted; and
- Slightly elevated concentrations of contaminant within the Made Ground only when compared to a commercial end-use screening criteria – TPH exceedances were recorded within the centre of site. The natural soils recorded no exceedances.

Gas Results

- Gas concentration and flow rate results for carbon dioxide and methane have been compared to guidance values given in CIRIA Report C665. Findings showed that no gas protection measures were required at the site.

Key Recommendations and Conclusions

- Selected contamination results, while elevated above the screening criteria, are not considered to be indicative of contamination at the site, but rather indicative of the background conditions in general groundwater, as evidenced from the history of the wider development area; and
- Further trial pitting could be undertaken in the location of TP433, where evidence of oil and metal scrap was identified.

AECOM North West Cambridge Phase 2 Development. Phase 2 Ground Investigation Report (August 2019)

13.99 A Phase 2 Ground Investigation report for the North West Cambridge development site was prepared by AECOM for the University of Cambridge (August 2019). A summary of the ground investigation works, and an interpretation of the results is provided in the report. AECOM were commissioned to undertake an assessment and characterise the stockpile material with regards to geotechnical properties and their earthworks suitability. The University of Cambridge proposed to reuse the soil stockpiled during the Phase 1 works for earthworks to form part of any future development.

13.100 Geotechnics carried out the intrusive investigation works under the direction of AECOM. Five cable percussion and 52 trial pits were drilled during the ground investigation works.

13.101 Boreholes and trial pits were drilled in stockpiling areas (SP01, SP02, SP23, SP25) and a non-stockpiled area. Within the stockpiled areas ground conditions comprised Made Ground, described as slightly sandy, slightly gravelly clay, with gravel of chalk, flint, clinker, mudstone, concrete, brick, wood, quartzite and coal. The stockpile material overlies the Head Deposits and Gault Clay Formation. In twelve of the trial pits in the non-stockpiling areas, topsoil was encountered but in the remaining six, Made Ground was encountered overlying Head Deposits and Gault Clay Formation.

13.102 Groundwater was encountered in boreholes and trial pits around 3m bgl.

Ground Investigation Results

13.103 Soil laboratory results were compared against a range of GACs including LQM/CIEH S4ULs, EIC/AGS/CL:AIRE GACs and DEFRA C4SL 12/2014 using a residential with plant uptake end receptor. For assessment of controlled waters GACs have been taken from a range of sources including AECOM Drinking Water Guidance (adopting WHO methodology)[12], SEPA (WAT-SG-53)[13] and UK DWS[14].

Soil Results

- No human health exceedances were identified in the 45 samples collected from SP01, SP02, S23 and SP25;
- Asbestos was not detected in any of the 121 samples tested;
- TPH exceedances of the DWS GACs were reported in 10 of the 45 samples analysed. These were within 1 order of magnitude and were not considered a risk by AECOM to controlled waters receptors due to the conservatism of the controlled waters GACs;
- Fluoranthene and benzo(a)pyrene in BH503 and SP02 exceeded the EQS GACs by up to 4 orders of magnitude;
- Other PAH compounds which exceeded the controlled waters GACs between 1 and 3 orders of magnitude include naphthalene, anthracene, benzo(g,h,i)perylene, benzo(b)fluoranthene and benzo(k)fluoranthene. Only two samples exceeded the benzo(a)pyrene concentrations for non-urban areas, but none exceeded the urban national concentrations. Therefore, considered unlikely to be a controlled waters risk; and
- Arsenic, cadmium, copper, lead, nickel and zinc exceeded controlled waters GACs by no more than one order of magnitude and are therefore, considered to represent background concentrations.

Key Recommendations and Conclusions

13.104 Although a risk to controlled waters from the identified soil exceedances is considered unlikely, assessment based on soil sampling partitioning is very conservative and it is recommended that leachate testing is carried out during the final stockpile validation works in order to confirm this.

Potential Sources of Contamination

13.105 The potential sources of contamination identified from historical Ordnance Survey maps within and around the site boundary are as follows:

- Gravel pits, unspecified pits and unspecified ground workings present on-site and off-site;
- Burial grounds and cemeteries present on-site and off-site;
- Unspecified tanks shown present on-site and off-site;
- Electricity substations shown present on-site and off-site;
- Garages shown present on-site and off-site;
- Service and fuel stations on-site and off-site;
- Historical landfill within the site boundary, which received 'inert waste' between 1984 and 1986; and
- Unspecified heaps present off-site.

13.106 A Conceptual Site Model (CSM) has been prepared and is presented in **ES Volume 3, Appendix: Ground Conditions and Land Contamination – Annex 1**. The CSM has been prepared using a Source-Pathway-Receptor CSM model to identify potential pathways by which sources of contamination may impact on identified receptors. The CSM has been used to inform the assessment of the potential impact of the Proposed Development for geology, soils, hydrogeology and contaminated land receptors in this ES chapter.

13.107 Based upon the CSM produced for the site (**ES Volume 3, Appendix: Ground Conditions and Land Contamination – Annex 1**) an evaluation of the risks posed by the identified potential pollutant linkages at the site has been prepared and is presented in Table 13.12.

[12] *AECOM Drinking Water Guidance (adopting WHO methodology)*
[13] *Scottish Environmental Protection Agency Supporting Guidance (WAT-SG-53) Environmental quality standards for discharge to surface waters.*
[14] *UK Drinking Water Standards*

Table 13.12 Contaminant Linkage Preliminary Risk Assessment

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk (CIRIA C552)	LCRM Risk Category	Justification
On-Site Historical Activities and associated Made Ground; Current and former petrol stations; Electricity Substations; and Industrial features including tanks. Off-Site Historical Activities and associated Made Ground; Current and former petrol stations; Electricity Substations; Industrial features including tanks; Current electrical vehicle charging station; and Motor Repairs	Soil ingestion/ Dermal contact	Construction and Maintenance Workers	Medium	Low	Moderate /Low	Acceptable	Made Ground is present locally at the site due to the various phases of construction and demolition on the site. Made Ground was proven up to 3.40 m bgl in general area of the Swirles Court and Ridgeway Village developments, within Phase 1 of the 2013 OPP. The URS (2013) ground investigation recorded maximum concentrations for arsenic (TP434 0.4m bgl) and benzo(a)pyrene (TP402 0.7m bgl, BH407 3m bgl) in soil samples which were slightly elevated in comparison to the GACs. The URS report concluded that while elevated above the screening criteria, the results are not considered to be indicative of contamination at the site, but rather indicative of the background conditions as evidenced from the history of the wider development area The Proposed Development, with the exception of soft landscaped areas will be covered by mostly hardstanding, acting as a barrier between receptors and source of contaminants. Therefore, the potential risk to site visitors and site users including residents and workers from direct contact with soil or groundwater from historic land uses on-site is considered to be Low. This is based on the site in its current state Further ground investigation is required, including chemical analysis and review, to understand the extent of the contamination noted during previous ground investigations, and the source, whether this be due to present day activities or from former use of the site.
		Site Visitors and site users	Mild	Low	Low	Acceptable	
	Inhalation of dust – indoor and outdoor	Construction and maintenance workers	Medium	Low	Moderate / Low	Acceptable	The risk of inhalation of soil particulates by site visitors, site users (residents and workers) and adjacent site users is considered to be Moderate / Low. The Proposed Development will be undertaken in phases and there is potential during demolition and construction activities to generate soil derived dust and impact on the human health receptors including users and visitors of the earlier completed development phase. This can be mitigated through appropriate health and safety measures during construction of future developments.
		Site Visitors and Site Users	Medium	Low	Moderate / Low	Acceptable	
		Adjacent Site Users	Medium	Low	Moderate / Low	Acceptable	
	Vapour intrusion and inhalation – indoors and outdoors	Site Visitors and Site Users	Medium	Low	Moderate/Low	Acceptable	The potential risk to site users and visitors from inhalation of vapours derived from soils or groundwater including potential contamination from leaks/spills is considered to be Moderate/Low (particularly indoors). This is due to the presence of Made Ground as proven in the historic 2013 ground investigation. The risk to adjacent site users is considered to be Low; as there was no known vapour data recorded for the site; the likelihood of occurrence is considered to be Unlikely. Further site characterisation / assessment may be required to quantify the significance of the risks identified.
		Adjacent Site Users	Medium	Unlikely	Low	Acceptable	
	Gas ingress – inhalation	Site Users	Mild	Low	Low	Acceptable	The risk from ground gas to the identified human receptors is considered Low. Although Made Ground is anticipated to be present at the site, the URS 2013 GIR classified the site as a Characteristic Situation 1 (CS1) site. However, there were limited ground gas monitoring during the investigation. Further ground gas monitoring and site-specific risk assessment is required to assess the risk to the Proposed Development and associated human receptors.
		Site Visitors	Mild	Low	Low	Acceptable	
		Adjacent Site Users	Mild	Unlikely	Very Low	Acceptable	
	Gas ingress – explosive atmosphere	Site Users	Medium	Unlikely	Low	Acceptable	The risk from explosive atmospheres has been identified as Low. No elevated concentrations of Methane are noted on-site from historic ground investigations, only carbon dioxide which does not pose an explosion risk. Further site characterisation / assessment may be required to quantify the significance of the risks.
		Site Visitors	Medium	Unlikely	Low	Acceptable	
		Adjacent Site Users	Medium	Unlikely	Low	Acceptable	
	Leaching and vertical migration through unsaturated zone	Principal Aquifer	Medium	Low	Moderate / Low	Acceptable	The nature of the Made Ground is unknown and could represent sources of contaminants, including contaminants associated with the current petrol filling station, electricity substation, and industrial features (including tanks). With respect to the current petrol filing station, main risk is from historic spills/leaks into the underlying Made Ground on-site. The site is directly underlain by an Undifferentiated Secondary superficial aquifer. The bedrock aquifer is classified as a Principal Aquifer across the whole site. There are no potable groundwater abstractions identified on-site or within 250m, and the site is not within a SPZ. It is considered that there is a potential Low to Moderate/Low risk to the underlying groundwater. The presence of hardstanding limits the potential for leaching and acts as a barrier to a degree to infiltration. However, infrastructure such as service trenches may provide a preferential pathway for migration of contaminated groundwater through granular fill materials if present on-site. Further site characterisation / assessment may be required to confirm the groundwater quality regime at the site and quantify the significance of the risks identified.
		Undifferentiated Secondary Aquifer	Mild	Low	Low	Acceptable	
	Lateral migration in groundwater	Principal Aquifer	Medium	Low	Moderate / Low	Acceptable	
		Undifferentiated Secondary Aquifer	Mild	Low	Low	Acceptable	
	Vertical migration in groundwater	Principal Aquifer	Medium	Low	Moderate / Low	Acceptable	
		Undifferentiated Secondary Aquifer	Mild	Low	Low	Acceptable	
	Baseflow from groundwater to surface water	Surface Waters	Medium	Unlikely	Low	Acceptable	The closest surface water feature is Washpit Brook located within the western extent of the site. Considering the distance to the nearest surface water receptor, the risk of contamination to surface waters is considered to be Moderate/Low. Should the risk of hydraulic connection between the groundwater and surface water wish to be quantified, site characterisation / assessment may be required to confirm.
	Gas Intrusion - explosion	Buildings & Infrastructure: Structures with enclosed spaces	Severe	Unlikely	Moderate / Low	Acceptable	Elevated carbon dioxide (ground gas) was recorded on-site during the historic URS 2013 ground investigation. The site is also occupied by mostly areas of hardstanding. Further site characterisation / assessment may be required to quantify the significance of the risks identified.

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk (CIRIA C552)	LCRM Risk Category	Justification
	Direct contact - corrosion	Buildings & Infrastructure: Concrete	Mild	Low	Moderate / Low	Acceptable	Aggressive ground conditions may be encountered at the site due to the underlying geology. An assessment of the aggressive ground conditions undertaken in the AECOM (2011) Geotechnical Report indicated the presence of pyrite within the Gault Formation and the assessment conservatively recommended a DS classification of DS-3 and ACEC classification of AC-3 to account pyrite in the concrete design of structures. From previous investigations there are no identified elevated concentrations of contaminants that could impact in-ground services, and membranes (if used as part of future development). Further site characterisation assessment is recommended to refine the risk and to determine appropriate classification of the ground materials to inform specification of construction materials.
		Buildings & Infrastructure: Services	Mild	Low	Low	Acceptable	
		Buildings & Infrastructure: Gas/ damp membranes	Mild	Low	Low	Acceptable	
	Direct contact - permeation of water pipe	Buildings & Infrastructure: Services	Mild	Low	Low	Acceptable	Complete linkages are considered possible and further site characterisation assessment is recommended to refine the risk.
	Potential Contaminant migration	Sensitive Land Uses	Mild	Unlikely	Very Low	Acceptable	Traveller's Rest Pit SSSI is located in the east of the site. Two areas of designated Green Belt are located within and in the vicinity of the site. The risk from potential contaminant migration to the Traveller's Rest Pit and the Green Belt areas is considered to be Very Low

RECEPTORS AND RECEPTOR SENSITIVITY

Existing

13.108 The existing receptors on-site and within the surrounding area that may be affected by the Proposed Development are listed in Table 13.13.

Table 13.13 Existing Receptors

Resource/Receptor	Resource Sensitivity	Justification
Human Health		
Adjacent Site Users	High	A mixture of residential, academic and agricultural land surrounds the site, therefore the highest sensitivity receptor for a worst-case scenario.
Controlled Waters (Hydrogeological And Hydrological Receptors)		
Secondary Undifferentiated Aquifer in the Head deposits	Low	Secondary Undifferentiated Aquifers have usually been classed as either minor or non-aquifers, therefore the sensitivity is considered to be low.
Principal Aquifer in the Melbury Marl Chalk Formation Bedrock Aquifer	High	The Melbury Marl Chalk Formation Bedrock Aquifer is a Principal Aquifer, but it is relatively small, there are no SPZs with 1 km and the groundwater abstractions within 1km are for irrigation, farming, dewatering and garden watering, so although the aquifer may have local importance, it is not considered to be regionally significant.
Surface waters – Washpit Brook and Brook Leys	Low	Although Washpit Brook does not have a WFD classification, it is within the WFD surface water body catchment of Bin Brook (located 521m SE), the River Cam (located 781m SE) and Old West River (1,209m NW). Given the proximity of the surface water bodies on-site, the sensitivity has been classed as low. Due to their respective distances from the site, the River Cam, Old Qwest River and Bin Brook are not considered to be likely receptors, and therefore have been scoped out of any further assessment.
Geology (Sensitive Land Uses)		
Traveller's Rest Pit SSSI	High	Traveller's Rest Pit is a geological SSSI, designated for the Observatory Gravel reserves.
Built Environment		
Concrete	Medium	The site has a recommended ACEC classification of AC-3 and DS classification of DS-3 to account for pyrite in the Gault Formation.
Enclosed Spaces	Low/Negligible	Site has previously been characterised as a CS1. However, the ground gas monitoring has been limited.
Services	Negligible	As no contaminants that may impact services have been identified on-site from previous investigation, the sensitivity of the services is considered to be negligible

Introduced

13.109 The most sensitive receptors that are being introduced as part of the Proposed Development are listed in Table 13.14.

Table 13.14 Introduced Receptors

Resource/Receptor	Resource Sensitivity	Justification
Human Health		
Construction and maintenance workers	High	As construction workers will be in close proximity with potential contaminants, especially those working below-ground for prolonged periods of time, the sensitivity is considered to be High.
Site Users (Residents)	High	As a large proportion of the Proposed Development will be residential, the sensitivity is considered to be High.
Site Visitors	High	Visitors to the site are considered to be of high sensitivity as although they are a sensitive receptor, they are on-site temporarily.
Built Environment		
Concrete	Medium	Previous GI reporting recommended ACEC classification of AC-3 and DS classification of DS-3 to account for pyrite in the Gault Formation at the site.
Enclosed Spaces	Low/Negligible	Site has previously been characterised as a CS1. However, the ground gas monitoring has been limited with only 2 monitoring rounds conducted across 11 boreholes across the site.
Services	Negligible	As no contaminants that may impact services have been identified on-site from previous investigation, the sensitivity of the services is considered to be negligible
Gas/ Damp Membranes	Negligible	As no contaminants that may impact services have been identified on-site from previous investigation, the sensitivity of the services is considered to be negligible

EMBEDDED MITIGATION

13.110 The EIA process aims to avoid, prevent, reduce or offset potential environmental effects through design and / or management measures. These are measures that are inherent in the design and construction of the Proposed Development (also known as embedded mitigation). Some aspects of embedded mitigation are required as a result of legislative requirements and / or standard sectoral practices. Some of these embedded mitigation measures as applicable to the ground conditions assessment are described.

13.111 Embedded mitigation is taken into account prior to the assessment of effects in order to avoid considering assessment scenarios that are unrealistic in practice. These have then been followed through the assessment to ensure that realistic likely environmental effects are identified.

13.112 The following impact avoidance measures have either been incorporated into the design or are standard construction or operational practices.

Enabling, Demolition and Construction

13.113 All works will be undertaken in accordance with relevant legislation and guidance, which will include the development of a Construction Environmental Management Plan (CEMP) to be submitted and approved by the relevant authorities. The CEMP will set out the key measures to be employed during the construction of the Proposed Development, to control and minimise the impacts on the environment, as well as setting out how impacts upon ground conditions will be managed during construction. The CEMP will be prepared by the construction contractor prior to construction.

13.114 It is stated in **ES Volume 1, Chapter 5: Enabling, Demolition and Construction** that an Outline CEMP has been prepared in support of the planning application and **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule** presents construction related environmental management, mitigation and monitoring measures.

13.115 As summarised in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule**, the CEMP will define the hours of operation, dust control measures, vehicle emission controls, a schedule of all plant, non-road and road mobile vehicles. In addition to the environmental management

measures and procedures (such as noise control and protection of ecology), consideration shall also be given to construction materials quantities and best practice environmental standards for construction sites.

13.116 In order to manage and monitor waste generated on the site during construction, a Site Waste Management Plan (SWMP) will be developed which will allow for waste streams to be estimated and monitored and goals set with regards to the waste produced. The SWMP will require that the construction contractor segregates waste streams on-site, prior to them being taken to a waste facility for recycling, disposal or reuse in accordance with appropriate permit. All waste removal from the site will be undertaken by fully licensed waste carriers and taken to permitted waste facilities. In addition, CEMP will also include a Material Management Plan (MMP) following guidance in DoWCoP. [15]

13.117 It is understood that stockpiled material is already present on-site generated from Phase 1 of the 2013 OPP, which is intended to be used during enabling works for the Proposed Development. The re-use of site-won materials must be under a MMP where the DoWCoP requirements have been met and approval from the appropriate regulator (the Environment Agency) has been granted; a Qualified Person under the DoWCoP must be engaged to approve the MMP and a verification report should be produced to demonstrate that the MMP has been properly enacted. Where material requires alteration, remediation or improvement prior to reuse, an environmental permit or an exemption may need to be sought prior to the reuse of material.

13.118 Where soil materials are deemed to be surplus to the requirements of the project, such materials, will be classified as waste under the Waste Framework Directive (WFD) (2009/98/EC) as either hazardous (17-05-03) or non-hazardous (17-05-04) soils. Classification will be undertaken using a proprietary assessment tool such as "HazWasteOnline™". Waste deemed to be hazardous, will require testing using the Waste Acceptance Criteria (WAC) prior to disposal to landfill. The 'Waste Duty of Care Code of Practice' (Department for Environment, Food and Rural Affairs, 2018) notes that there is a duty of care for the safe management of waste, particularly for the protection of the environment and human health. The duty of care is applicable if waste is imported, produced, carried, kept, treated, disposed of or have control (as a dealer or broker) of waste.

13.119 Construction phase mitigation measures in relation to ground conditions and land contamination generally included with a CEMP are summarised here:

- Best practice will be adopted during construction to prevent or reduce as far as reasonably practicable spillage risk and spillage effects by adhering to the CEMP, where such measures are to be set out. The CEMP will address the management of concrete batching, concrete usage and accidental spillage relating to foundation and building construction;
- Land disturbance will be reduced as far as is reasonably practicable and disturbed areas outside the development footprint will be revegetated as soon as possible after construction. Soil excavation will be undertaken with consideration given to the prevailing ground and weather conditions when programming the execution of the works to reduce the potential for mobilisation of exposed soil and / or sediment. Although not anticipated to be widely present across the majority of the site, if encountered, topsoil and subsoil will be kept separately during excavation;
- Temporary construction compound areas will be located away from all significant surface water bodies where possible;
- Washing out of vehicles or equipment will only take place in controlled areas; and
- Suitable areas for specific construction activities will be identified within the CEMP and consultation with the EA will take place before construction commences.

13.120 ACEC and DS classifications (AC-3 and DC-3) determined from previous ground investigations will be used to specify the appropriate class of any concrete foundation and/or service pipe that will be used in the construction of the infrastructure associated with the Proposed Development.

13.121 The site has been previously classified as CS1, but due to the limited nature of the monitoring, further ground gas monitoring shall be undertaken to develop a comprehensive Ground Gas Risk Assessment (GGRA) to appropriate classify the site. Following the GGRA, the appropriate ground gas protection measures will be implemented into building design in accordance with BS8485:2015+A1:2019 'Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings', in line with of protective measures for methane and carbon dioxide ground gases for new buildings.

13.122 Rainfall runoff from areas where there is a risk of contamination will be managed using temporary drainage systems and or tankered offsite for treatment (including settlement of suspended solids and or oil interceptors) prior to discharge to local watercourses with the approval of the Environment Agency pursuant to a discharge licence. The drainage systems will incorporate pollution control systems designed in line with the CIRIA C532[16] or as agreed with the relevant authorities. Surface watercourses and waterbodies near worksites will be regularly inspected for signs of siltation or other forms of pollution in line with CIRIA Environmental Good Practice on Site Guide C811[17], whilst pumped groundwater, process effluents and construction site runoff will be tested to ensure compliance with discharge consent requirements – these measures are to be detailed in the CEMP.

13.123 Rainfall runoff from areas of low contamination risk will be captured and stored in settlement ponds for reuse where reasonably practicable to reduce consumptive water use (e.g. to supply wheel wash facilities or for dust suppression).

13.124 Dust generation will be kept to a minimum in accordance with general best practice, as outlined in, for example, "Environmental Good Practice on Site", 5th Edition, CIRIA Publication C811.

13.125 All earthworks operations will be undertaken in accordance with the following guidance:

- BS1997:2004 Eurocode 7;
- BS16907-1 to 7:2018 Earthworks (BSI, 2018);
- BS6031:2009 Code of Practice for Earthworks (BSI, 2009); and
- National Highways (NH) guidelines including Design Manual for Roads and Bridges (DMRB) Series 600 'Earthworks' (Highways England, 2016).

13.126 The Proposed Development design will actively work towards achieving an earthworks balance. Best practice will be adopted during construction to prevent or minimise spillage risk and spillage impacts by adhering to the CEMP. The CEMP will address the management of concrete batching, concrete usage and accidental spillage relating to foundation and building construction.

13.127 Where contamination is identified, an appropriate remediation scheme will be produced which will outline the activities / measures required to achieve the relevant standards for the proposed end uses (e.g. for instance the use of clean cover layers in areas of soft landscaping or public open space). This will be submitted for agreement to the local council. On the completion of any remediation, a validation report would be produced to ensure that the remedial criteria set out in the remediation scheme have been achieved. The contamination assessment will be conducted in accordance with CIRIA C552. Any required remedial measures will be adopted as part of the Proposed Development.

13.128 If piling is required, a piling risk assessment will be carried out to reduce as far as reasonably practicable the risk of development of preferential pathways (e.g. groundwater flow) between the Made Ground present and the underlying Principal Aquifer. The assessment will be in accordance with the EA's guidance documents including, piling into contaminated sites and will determine the risk to receptors through potential pollution scenarios considering any remediation measures proposed by the Applicant. A piling risk assessment will be required to assess the risks associated with piling or other ground stability techniques to ensure no unacceptable risks to groundwater.

13.129 The Proposed Development design is anticipated to be working towards a net cut and fill balance of zero. The suitability of excavated materials for potential recovery, and / or any permitting required to recover excavated materials, will be assessed following confirmatory GI works, and with consideration to remedial works. A cut

[15] *Contaminated Land: Applications in Real Environment (CLAIRE) (2011); Definition of Waste: Code of Practice*
[16] *Control of Pollution from Construction Sites: Guidance for Consultants and Contractors: CIRIA C532 (2001)*
[17] *Environmental Good Practice on Site (fifth edition): CIRIA C811 (2023)*

and fill exercise across the site will be required to create the undulating landform for the planned design. It is anticipated that excavated material will be reused to create the required topography.

13.130 Various fuels, oils and chemicals will be required during the construction of the Proposed Development. Measures to reduce potential effects associated with these substances during construction will include:

- Chemicals, fuels and oils will be stored in secure and designated storage areas in accordance with the appropriate regulatory requirements, including the Control of Pollution (Oil Storage) (England) Regulations 2001 and Control of Substance Hazardous to Health (COSHH) Regulations 2002. Storage areas will need to be located on hardstanding areas to prevent the possible infiltration of contaminants into soils;
- Re-fuelling of plant will take place in appropriate areas to be agreed in the CEMP i.e. in locations with an impervious base and are bunded or provided with interceptor drains. Spill kits will be kept with all vehicles on-site and all bowsers are to be double skinned or have a bund. Vehicles and equipment will not be left unattended during re-fuelling. To prevent materials leaking from static plant, such as pumps and generators, static plant will be placed on drip trays wherever practicable;
- All pumps, generators and similarly fuelled equipment will be placed on drip trays or in a bunded area, and no vehicles or equipment will be allowed to enter any watercourses at any stage. Refuelling areas will be positioned a minimum of 50m away from any watercourse or drain. All vehicles, generators and similarly fuelled equipment will be maintained to a high standard to reduce as far as is reasonably practicable potential pollution incidents;
- All valves, hoses and associated re-fuelling equipment will be regularly inspected to ensure that they are still in a suitable condition. This equipment will be protected from vandalism and unauthorised interference and will be turned off and securely locked when not in use;
- All storage of drums containing hazardous material will be located within the Main Site temporary construction compound. Any spillages or leaks will be dealt with promptly and all waste disposed of in an appropriate manner. All tanks, drums and other containers will be clearly marked as to their contents. Before any tank is removed or perforated, all contents and residues will be emptied by a competent operator for safe disposal;
- All bunds will have a capacity of at least 110% of the storage volume and will be covered where practical to prevent the collection of rainwater; and
- Any staff involved in fuel handling will be given appropriate training, and site-specific procedures will be developed for all staff. Workers will be made aware of their statutory responsibility under section 85 of the Water Resources Act 1991 not to “cause or knowingly permit” water pollution. In addition, they will be made aware of their statutory responsibility under Regulations 38(1) and 12(1) of the Environmental Permitting Regulations 2019 not to “cause or knowingly permit” a water discharge activity or groundwater activity without an environmental permit.

13.131 A 10m buffer zone of the Traveller’s Rest Pit SSSI is to be established prior to the commencement of construction works.

POTENTIAL EFFECTS (including Embedded Mitigation)

Enabling, Demolition and Construction

Human Health

13.132 Construction and maintenance workers and adjacent site users (including nearby residents) are considered the main potential human health receptors likely to be affected by the construction phase (including enabling and demolition) works.

13.133 Potential impacts of land contamination on human health receptors include direct contact with or ingestion of contaminated soil, dust or water, inhalation of soil particulates, vapours and ground gas and explosive atmosphere in enclosed spaces from the build-up of ground gases.

13.134 Previous GI has identified only minimal exceedances of the residential human health GAC within soils, minor exceedances of arsenic and benzo(a)pyrene were reported as part of the 2013 URS GI. These exceedances were deemed to be representative of the background conditions present at the site, not indicative of contamination. Furthermore, the majority of the Proposed Development is anticipated to comprise hardstanding, with the exception of soft landscaped areas, creating a barrier between receptors and the potential sources of contamination.

13.135 The site has previously been classified as a CS1 site, meaning that the site is considered to be very low risk for ground gas. No elevated levels of methane have been measured on site during previous GIs. Although carbon dioxide has been recorded at the site, the concentrations were classified as CS1. Furthermore, there is no explosive risk from carbon dioxide.

13.136 All human health receptors are considered to be high in terms of sensitivity. The magnitude of the discussed potential effects on to the human health receptors with the embedded mitigation measures is low. Therefore, the effect on human health receptors (adjacent site users and construction workers) without further mitigation is Moderate Adverse (**significant**).

13.137 Mitigation measures are required to reduce the effect.

Controlled Waters

13.138 The superficial Secondary Undifferentiated Aquifer, the bedrock Principal Aquifer and Washpit Brook and Brook Leys are considered to be the primary controlled waters receptors likely to be affected by the construction works.

13.139 During the construction works, preferential pathways may be created through service trenches, shallow excavations or piling, resulting in migration of contaminants into the underlying groundwater aquifers or lateral migration via surface water run-off into surface water.

13.140 Minor and isolated exceedances of the EQS were identified during the previous GIs, however the risk to controlled waters was assessed to be low. As there are no SPZ within 1km of the site and groundwater abstractions within 1km of the site are for agricultural use, exceedances of the DWS are not considered relevant.

13.141 The sensitivity of the Principal Bedrock Aquifer is high**,** and the magnitude of impact is considered to be low . Therefore, the potential effect without mitigation measure is considered to be Moderate Adverse (**significant**).

13.142 The sensitivity of the Undifferentiated Superficial Aquifer and Washpit Brook and Brook Leys are low**,** and the magnitude of impact is considered to be low. Therefore, the potential effect without mitigation is Negligible (not significant).

13.143 Mitigation measures are required to reduce the Moderate Adverse (**significant**) effects.

Geology

13.144 The Traveller’s Rest Pit SSSI is considered to be the primary geological receptor likely to be affected by construction works. However, as required by the North West Cambridge Area Action Plan (2009) (see Figure 2.1 North West Cambridge Area Action Plan Site Allocation), the Traveller’s Rest Pit SSSI site will be safeguarded and protected as part of the Proposed Development to ensure that there is no adverse impact during the construction and operation of the Proposed Development. The measures that will be implemented to safeguard the site will be detailed in the CEMP and are considered to be part of the embedded mitigation of the works.

13.145 The sensitivity of the Traveller’s Rest Pit SSSI is high**,** and the magnitude of impact is negligible. Therefore, the potential effect not considering mitigation is Minor Adverse (not significant).

13.146 No further mitigation measures are required to reduce the effect.

Built Environment

13.147 The main built environment receptors likely to be affected by construction works are buried concrete, enclosed spaces, services and gas/damp membranes.

13.148 Aggressive ground conditions may be encountered at the site due to the underlying geology. Previous GIs classified the ground conditions as DS-3 and AC-3 due to the presence of pyrite. From previous investigations there are no identified elevated concentrations of contaminants that could impact in-ground services, and membranes. The embedded mitigation measures will include specifying the appropriate class of any concrete foundation and/or service pipe that will be used in the construction of the infrastructure associated with the Proposed Development.

13.149 The sensitivity of the concrete is medium**,** and the magnitude of impact following embedded mitigations is low. Therefore, in the absence of mitigation the potential effect is Minor Adverse (not significant).

13.150 The sensitivity of the enclosed spaces, services and gas/damp membranes is negligible**,** and the magnitude of impact is considered to be negligible. Therefore, the potential effect without mitigation is Negligible (not significant).

13.151 No mitigation measures are required to reduce the effect.

Phasing / Interim Year

Human Health

13.152 During the Interim period, construction will be ongoing on the site but completed areas will be fully operational with site users (residential) and site visitors present on-site, as well as construction and maintenance workers. During this period, a new receptor of site users (residential) and site visitors will be introduced.

13.153 There may be increased likelihood of inhalation of soil particulates and exposed soils during excavation and enabling work may present increased opportunity for direct contact and/or ingestion of soils. As no significant contamination has been identified on-site, the risk is considered to be low. There will be potential for asphyxiation from gas ingress into the completed buildings and encloses spaces. As the site is considered to be CS1 (very low risk) the risk of gas ingress is considered to be low.

13.154 All human health receptors are considered to be high in terms of sensitivity. The magnitude of the discussed potential effects on to the human health receptors is low. Therefore, the potential effect on human health receptors is Moderate Adverse (**significant**).

13.155 Mitigation measures are required to reduce the effect.

Built Environment

13.156 During the Interim period, there is potential for build-up of ground gas within the completed buildings and enclosed spaces, from Made Ground underlying the site. Previous ground gas monitoring on the site indicates that the site is classified as CS1 (very low risk). Although previous ground gas monitoring is considered to be limited, no methane was detected during any event. Low levels of carbon dioxide were measured but this poses no risk to buildings as it does not contribute to an explosive environment.

13.157 The sensitivity of the enclosed spaces is Negligible**,** and the magnitude of impact is considered to be Negligible. Therefore, the potential effect without mitigation is considered to be Negligible (not significant).

13.158 Mitigation measures are not required to reduce the effect.

Completed Development

13.159 The AECOM (2024) Land Contamination Preliminary Risk Assessment undertaken for the completed development concluded that the potential risks from land contamination to the identified receptors range from 'Very Low' to 'Moderate / Low' and are within the 'Acceptable' risk category. In addition, it is considered that the mitigation measures implemented during the construction phase will be carried forward into the operational phase of the Proposed Development. Therefore, the impacts during the operational phase of the Proposed Development are not likely to be significant.

Human Health

13.160 Following the completion of the Proposed Development, the primary risks to site users (residents) and site visitors will be related to asphyxiation from ground gas ingress, although the limited gas monitoring information suggests low risks from ground gas. The presence of hardstanding across the majority of the site and contamination testing in areas of soft landscaping will act as a barrier to the pathway between human health receptors and sources of contamination.

13.161 Site users and site visitors have a high sensitivity, and the magnitude of impact is low. Therefore, in the absence of mitigation, the potential effect is considered to be Moderate Adverse (**significant**).

13.162 Mitigation measures are required to reduce the effect.

Controlled Waters

13.163 The operation of the Proposed Development is not likely to introduce new risks or impacts on controlled waters receptors as indicated in the Conceptual Site Model presented in Table 13.12. The identified controlled waters receptors include the superficial Secondary Undifferentiated Aquifer, the bedrock Principal Aquifer and Washpit Brook and Brook Leys.

13.164 For the completed development, the sensitivity of the Principal Bedrock Aquifer is high**,** and the magnitude of impact is considered to be negligible. Therefore, the potential effect without mitigation measure is considered to be Minor Adverse (Not Significant).

13.165 The sensitivity of the Undifferentiated Superficial Aquifer and Washpit Brook and Brook Leys are low**,** and the magnitude of impact is considered to be negligible. Therefore, the potential effect without mitigation is Negligible (not significant).

13.166 No mitigation measures are required to reduce the effect.

Built Environment

13.167 The main built environment receptors for the completed development are buried concrete, enclosed spaces, services and gas/damp membranes.

13.168 Aggressive ground conditions may be encountered at the site due to the underlying geology. However, protective measures carried out during the construction phase will mitigate the impact of potential aggressive ground conditions during the operation phase.

13.169 The sensitivity of the concrete is medium**,** and the magnitude of impact is low. Therefore, in the absence of mitigation the potential effect is Minor Adverse (not significant).

13.170 The sensitivity of the enclosed spaces, services and gas/damp membranes is negligible**,** and the magnitude of impact is considered to be negligible. Therefore, the potential effect without mitigation is Negligible (not significant).

13.171 No mitigation measures are required for built environment during the operational phase of the Proposed Development

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Enabling, Demolition and Construction Mitigation

13.172 All potential enabling and construction works effects in terms of their scale and nature will remain as discussed above under '*Potential Effects*', with the exception of the following effects which have been identified to require mitigation.

Human Health

13.173 The potential effects on human health during the enabling, demolition and construction works have been assessed as Moderate Adverse following the implementation of the procedures set out in the *Embedded Mitigation* section of this ES chapter. The construction works will be carried out in accordance with best practice and measures outlined in the CEMP.

13.174 Further mitigation measures to reduce Moderate Adverse effect could include undertaking additional ground investigation (GI) as recommended in the AECOM (2024) Land Contamination Preliminary Risk Assessment (PRA). The GI is to be completed prior to development commencing including areas not previous investigated. If risks from potential contamination is determined by the assessments carried following the GI, then a remediation strategy will be developed for the site and appropriate remediation measures implemented as required.

13.175 Following this mitigation, the magnitude of impact to the human health receptors would be considered to be negligible and the effect would be considered Minor Adverse (not significant).

Controlled Waters

13.176 Following the implementation of the embedded mitigation measures, the potential effects on the controlled waters receptors during the construction works have been assessed as Moderate Adverse for the Principal Bedrock Aquifer and Minor Adverse for the Secondary Undifferentiated Superficial Aquifer and surface waters present on site (Washpit Brook and Brook Leys). The construction works will be carried out in accordance with best practice and measures outlined in the CEMP.

13.177 Further mitigation to reduce the effects could include additional site investigation, including groundwater monitoring and assessment to be completed prior to development commencing including areas not previous investigated and appropriate remediation implemented as required. This can be secured by planning condition.

13.178 Following this mitigation, the magnitude of impact to the Principal Bedrock Aquifer would be considered to be negligible and the effect would be considered Minor Adverse (not significant). The magnitude of impact to the Secondary Undifferentiated Superficial Aquifer, Washpit Brook and Brook Leys would be negligible**,** and the effect would be Negligible (not significant).

Interim and Completed Development Mitigation

13.179 The receptors introduced during the Interim and Completed Development periods are site users (residents), site visitors and built environment (enclosed spaces). As the potential impact on enclosed spaces is considered to be negligible without mitigation, further mitigation is not required.

13.180 The potentially Moderate Adverse effects on human health can be mitigated through adequate risk assessment following an intrusive ground investigation. If the assessment identifies unacceptable risks, appropriate remedial measures and / or gas protection measures will be implemented during the enabling and construction phase of the Proposed Development in accordance with the Remediation Strategy developed for the site.

13.181 Following this mitigation, the impact to the human health receptors would be considered to be Negligible and the effect would be considered Minor Adverse (not significant).

Residual Effects

13.182 All of the residual effects resulting from the Proposed Development, are presented in Table 13.15, identifying whether the effect is significant or not.

Table 13.15 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Enabling, Demolition and Construction							
Human Health: Construction and Maintenance Workers and Adjacent Site Users	Contact, ingestion and inhalation of contaminated soils, water, vapours or dust. Asphyxiation from ingress of ground gas.	Minor Adverse	Not Significant	L	D	P	Lt
Controlled Waters: Principal Bedrock Aquifer	Leaching and vertical migration through unsaturated zone. Vertical or lateral migration in groundwater.	Minor Adverse	Not Significant	L	I	P	Lt
Controlled Waters: Superficial Secondary Undifferentiated Aquifer and Surface Water Features (Washpit Brook and Brook Leys)	Leaching and vertical migration through unsaturated zone. Vertical or lateral migration in groundwater.	Negligible	Not Significant	L	D	P	Mt
Geology: Traveller's Rest Pit SSSI	Potential contaminant migration	Minor Adverse	Not Significant	L	I	P	Lt
Built Environment: Buried Concrete	Corrosion	Negligible	Not Significant	L	D	T	St
Built Environment: Enclosed Spaces, Services and Gas/Damp Membrane	Gas explosion and corrosion	Negligible	Not Significant	L	D/I	T	St
Completed Development							
Human Health: Site Users and Visitors	Contact, ingestion and inhalation of contaminated soils, water, vapours or dust. Asphyxiation from ingress of ground gas.	Minor Adverse	Not Significant	L	D	P	Lt
Controlled Waters: Principal Bedrock Aquifer	No residual effects identified for completed development	Minor Adverse	Not Significant	L	I	P	Lt
Controlled Waters: Superficial Secondary Undifferentiated Aquifer and Surface Water Features (Washpit Brook and Brook Leys)	No residual effects identified for completed development	Negligible	Not Significant	L	D	P	Mt
Built Environment: Buried Concrete	Corrosion	Negligible	Not Significant	L	D	T	St

Notes:

Residual Effect

- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)

D = Direct / I = Indirect

P = Permanent / T = Temporary

St = Short Term / Mt = Medium Term / Lt = Long Term

N/A = not applicable / not assessed

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

13.183 The baseline conditions in relation to ground conditions and land contamination will likely remain unchanged in future if the Proposed Development was not implemented. The state of the baseline conditions including identification of any new receptors if the Proposed Development were to be implemented has been discussed above.

Cumulative Effects Assessment

13.184 The assessment of cumulative effects considers the potential impacts of the Proposed Development in combination with other planned or approved developments in the surrounding area. A total of eight cumulative schemes have been identified and are outlined in **ES Volume 1, Chapter 2: EIA Methodology**. This section identifies the effects of the Proposed Development in combination with the effects of other cumulative schemes within the surrounding area.

Enabling, Demolition and Construction

13.185 All the identified cumulative schemes are subject to the relevant planning processes, which are expected to include appropriate risk assessments for potential land contamination. Where necessary, mitigation or remediation measures would be implemented to minimise risks to both on-site and off-site receptors. It is also anticipated that the construction of the cumulative schemes will be carried out in accordance with best practice and measures outlined in the CEMP. On this basis, it is considered that the cumulative effects relating to land contamination during the enabling, demolition and construction works would not be significant.

Completed Development

13.186 There are not considered to be cumulative effects during operation as the Proposed Development and other developments in the surrounding area will be carried out in accordance with their respective planning permissions and will adhere to environmental industry standard and construction mitigation measures. This will mitigate the risks associated with ground conditions and contaminated land.

LIKELY SIGNIFICANT EFFECTS

13.187 Following the mitigation measures set out in Embedded Mitigation and Mitigation, Monitoring and Residual Effects, no likely significant effects as a result of the Proposed Development or cumulative effects have been identified as part of this assessment.

Chapter 14: Water Resource, Flood Risk and Drainage

TRIUM

WATER RESOURCES, FLOOD RISK AND DRAINAGE	
AUTHOR	AECOM
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Water Resources, Flood Risk and Drainage** Annex 1: Legislation, Planning Policy and Other Relevant Standard and Guidance; Annex 2: Foul Drainage Sketches; Annex 3: Anglian Water Correspondences; Annex 4: Flood Risk Assessment and Surface Water Drainage Strategy; Annex 5: Cambridge Water Correspondence.
KEY CONSIDERATIONS	This ES chapter assesses the likely significant effects of the Proposed Development on water resources, flood risk and drainage during enabling, demolition, construction and operational phases. The study area considered for this assessment includes the site and a 1km radius from the Proposed Development. An assessment of the potential direct and indirect effects of the Proposed Development, for the enabling, demolition and construction, and the operational phases, is undertaken based on a review of published data, including the Flood Risk Assessment (FRA) and Surface Water Drainage Strategy (SWDS), and liaison with the Lead Local Flood Authority (LLFA) and Anglian Water.
CONSULTATION	An EIA Scoping Report was prepared and submitted to South Cambridgeshire District Council (SCDC) and Cambridge City Council (CCC) in November 2024 (**ES Volume 3, Appendix: EIA Methodology – Annex 1**). An EIA Scoping Opinion was subsequently received on 23 January 2025 and is included within **ES Volume 3, Appendix: EIA Methodology – Annex 2**. This generally agreed with the scope of this ES chapter. The following comments were provided within the EIA Scoping Opinion in relation to water resources, flood risk and drainage: • *"Detailed modelling of the Washpit Brook should be undertaken as part of a site-specific Flood Risk Assessment (FRA) to define the flood zones extents at the site and to assess the impacts of climate change on flood risk. The Environment Agency (EA) should be consulted on any modelling undertaken as part of the FRA so they can review this and determine whether it is fit for purpose"* This modelling has been undertaken and is included in the site-specific Flood Risk Assessment contained in **ES Volume 3, Appendix: Water Resources Flood Risk and Drainage – Annex 4**. *"In relation to water resources, the Proposed Development represents an uplift on the current development plan allocation for the site, and in the absence of an up-to-date DEFRA approved WRMP that in includes for this uplift, it is recommended that potable water supply be fully scoped into the ES, with reference to the latest WRMP from Cambridge Water (February 2024)"* Consultation with Cambridge Water has been undertaken as part of this work and is contained in **ES Volume 3, Appendix: Water Resources Flood Risk and Drainage – Annex 5**. • *"The water used during the construction phase needs to be scoped in and considered separately to the water to be used during the operational phase of the development."* This is considered in section 14.65 and requirements for potable water during construction will be included in the Construction Environmental Management Plan (CEMP) • *"It is essential that the EIA process takes Waste Water Treatment Works (WWTW) capacity into consideration and must provide further details on how flows will be routed and subsequently treated at a works with sufficient capacity. The EA have indicated that there may be limitations in capacity at the local WWTWs and recommend Water Quality is scoped into the ES."* A pre-planning enquiry has been submitted to Anglian Water and the response confirms capacity to receive the predicted foul flows from the site. This is contained in the site-specific FRA, included within **ES Volume 3, Appendix: Water Resources Flood Risk and Drainage – Annex 4**. Consultation on flood risk and drainage has been undertaken with the LLFA, EA and Anglian Water. Copies of this correspondence is contained in the relevant annexes (**ES Volume 3, Appendix: Water Resources Flood Risk and Drainage – Annex 3 to 5**).

ASSESSMENT METHODOLOGY

Basis of Assessment

14.1 This ES chapter provides an assessment of the likely environmental effects on water resources, flood risk and drainage as a result of the Proposed Development. The potential environmental effects have been assessed for the enabling, demolition and construction and the operational phases of the site. This ES chapter is supported by the Flood Risk Assessment (FRA) and Surface Water Drainage Strategy (SWDS) (see **ES Volume 3, Appendix: Water Resources, Flood Risk and Drainage – Annex 4**), which both support the OPA.

14.2 In general, the assessments have been based on the maximum development parameters as this provides a worst case scenario for impact on water resources, flood risk and drainage.

14.3 In the context of this ES chapter, the term 'water resources, flood risk and drainage' covers the assessment of effects on or to:

- Washpit Brook;
- Surface water;
- Public drainage network;
- Groundwater;
- Water supply;
- Existing site (fluvial flood risk); and
- The Proposed Development (fluvial flood risk).

14.4 A qualitative assessment has been undertaken based on the Parameter Plans, as well as the Illustrative Masterplan and a desktop study of the following information:

- British Geological Survey (BGS), 1: 50,000 geological mapping[1];
- Environment Agency (EA) internet database, to include flood risk mapping[2];
- The Greater Cambridge Integrated Water Management Study Level 1 Strategic Flood Risk Assessment (SFRA)[3];
- Hydrogeological information for the site[4]; and
- Existing drainage information for the as constructed Phase 1 of the 2013 OPP[5].

Defining the Baseline

14.5 The study area considered for this assessment includes the site and a 1km radius from the Proposed Development. This radius is deemed appropriate, based on professional judgement in order to determine potential effects that the Proposed Development may have on water resources, flood risk and drainage within the study area. The 1km is based on professional judgement, taking into account of the extent over which the effects are expected to occur including the cumulative effects as a result of the Proposed Development. Surrounding cumulative schemes are expected to implement appropriate mitigation measures to ensure said sites do not cause any adverse impacts to the Proposed Development.

14.6 The baseline is assumed to be the site in its current state due to the nature of the data available for assessment focussing on the existing nature and use of the site.

14.7 The baseline condition is determined based on the review of the following information sources:

- Site-Specific Topographical Survey;
- British Geological Survey (BGS), 1:50,000 geological mapping[1];
- EA internet database, to include long term flood risk from varying sources (fluvial, tidal, surface water, reservoir flooding)[2];

[1] *British Geological Survey; Geology of Britain Viewer; Available online at: https://mapapps2.bgs.ac.uk/geoindex/home.html [Accessed May 2025]*
[2] *Environment Agency; Flood Map for Planning; Available online at: https://flood-map-for-planning.service.gov.uk/ [Accessed February 2025]*
[3] *The Greater Cambridge Integrated Water Management Study Level 1 SFRA; Available online at: https://www.greatercambridgeplanning.org/emerging-plans-and-guidance/strategic-flood-risk-assessment/ [Accessed May 2025]*
[4] *Department for Communities and Local Government; MAGIC Map; Available online at: https://magic.defra.gov.uk/ [Accessed May 2025]*
[5] *Anglian Water Sewer Records, Flood Risk Assessment and Surface Water Drainage Strategy, 2025*

- Magic Map internet database, to include Groundwater Source Protection Zones (SPZ), EA groundwater vulnerability map[4];
- Anglian Water Sewer Records[5];
- Regional and Local Planning Policies pertaining to the water environment including the WRMP from Cambridge Water dated February 2024; and
- Available supporting technical reports (e.g. FRA and SWDS).

Evolution of the Baseline

14.8 The evolved baseline scenario will comprise of review of the existing baseline conditions at an intermediate point in the future where the surrounding cumulative schemes (identified in **ES Volume 1, Chapter 2: EIA Methodology**) are implemented without the Proposed Development. The evolved baseline scenario has been considered qualitatively, relying on professional judgment and expertise.

Impact Assessment Methodology

Enabling, Demolition and Construction

14.9 Enabling, demolition and construction activities as set out within **ES Volume 1, Chapter 5: Enabling, Demolition and Construction** form the basis of this assessment. The relevant activities include:

- Excavations and groundworks;
- Demolition of buildings on-site where required;
- Site preparation and construction of infrastructure; and
- Installation of drainage infrastructure including pumping station.

14.10 The following potential impacts may occur during the enabling, demolition and construction of the Proposed Development:

- Excavations and groundworks may expose shallow groundwater increasing risk of groundwater flooding and potential risk of groundwater contamination from enabling, demolition and construction works;
- There may be spillages from construction vehicles resulting in contamination in the surface water runoff or exposed groundwater;
- Contamination of surface water runoff from hazardous substances used or stored on-site;
- Contaminated water entering the Washpit Brook;
- Impact to existing site levels resulting in localized surface water ponding during extreme rainfall events;
- Siltation due to surface water runoff from areas of exposed earthworks;
- Increase in foul and surface water flow rate and volume to public sewers in comparison to existing baseline condition where the site is not in use;
- Increase in potable water demand in comparison to existing condition where the site is not in use; and
- Potential increase in localised flood risk to and from the site from the enabling, demolition and construction works.

14.11 Control measures outlined within the **ES Volume 1, Chapter 5: Enabling, Demolition and Construction** are considered as part of this assessment. The control measures are expected to be developed further as part of the detailed Construction Environmental Management Plan (CEMP) prior to any works starting on-site.

Phasing

14.12 The assessment of the potential effects during the enabling, demolition and construction phase and completed development phase provide worst case scenario and no new additional receptors or effects are envisaged as a result of the phasing of the Proposed Development. Therefore, assessment of the phasing is deemed not required.

Completed Development

14.13 The assessment of the completed and operational Proposed Development based on the maximum development parameters has been undertaken as this provides worst case scenario for impact on water resources, flood risk and drainage. The assessment considers embedded mitigation measures to minimise flood risk, such as the use of Sustainable Drainage Systems (SuDSs), water efficiency methods and consideration of best practice guidance. The following plans were reviewed to identify the potential impacts on receptors:

- FRA (**ES Volume 3, Appendix: Water Resources, Flood Risk and Drainage – Annex 4**);
- SWDS (**ES Volume 3, Appendix: Water Resources, Flood Risk and Drainage – Annex 4**); and
- Parameter Plans.

14.14 An Illustrative Masterplan has been provided in relation to the completed development to demonstrate that a viable high-quality scheme can be achieved within the parameters that have been submitted for approval. The assessment is therefore based upon parameters sought for approval, however it notes that the Illustrative Masterplan elements as potential means for mitigation/design that could come forward as part of the detailed design stage, as discussed in the SWDS.

14.15 The following potential impacts may occur during the operational phase of the Proposed Development:

- Shallow groundwater may cause groundwater flooding during extreme rainfall events;
- Increase in foul water generation and surface water runoff due to urbanisation and climate change;
- Increase in potable water demand;
- Untreated surface water discharge into the Washpit Brook;
- Potential contamination of surface water runoff from vehicles;
- Potential flood risk to the Proposed Development due to site being located partly in Flood Zone 2; and
- Potential risk of off-site flooding from the Proposed Development.

Assumptions and Limitations

14.16 The assessment has been based on information received from a number of parties including the drainage undertakers, third-party environmental database suppliers, and the EA. It has been assumed that the information provided is accurate.

14.17 The baseline for assessment is assumed to be the site in its current state due to the data available for assessment focusing on the existing nature and use of the site. The assessment of potential effects has therefore been undertaken against the current baseline conditions at the site, determined via the information sources. As with any dataset, these may be subject to change, either since being recorded or in the future during the planning determination process, which may influence the findings of the assessment. However, these changes are unlikely to materially alter the results of this assessment.

14.18 Wider potential for environmental impacts as a result of increased foul water would be controlled by Anglian Water. An evaluation of these wider impacts goes beyond the scope of this ES chapter because it would require an assessment of the availability of regional waste water resources and the operations of the local waste water undertaker in providing these resources in a sustainable way. Correspondence with Anglian Water has been

undertaken with a pre-planning enquiry submitted. Anglian Water has confirmed in response that they have sufficient capacity to receive the predicted foul flows from the development.

14.19 Wider potential for environmental impacts as a result of increased water supply would be controlled by Cambridge Water. An evaluation of these wider impacts goes beyond the scope of this ES chapter because it would require an assessment of the availability of regional water resources and the operations of the local water supplier in providing these resources in a sustainable way. Making assumptions in relation to how sustainable the provision of potable water supplies would be is not considered appropriate. This therefore represents a limitation to this ES chapter. There will potentially be a requirement, post-planning, for Cambridge Water to undertake detailed network resiliency modelling to determine the scale of any local infrastructure reinforcement.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

14.20 Receptors that are likely to be affected by Proposed Development have been identified through desktop review of baseline conditions. The sensitivity or importance of each receptor is based on its considered value, for example its value as an ecological habitat, as a source of drinking water or as a recreational resource. The sensitivity of receptors and examples of criteria are provided in Table 14.1 below. The table has been developed based on the indicators set out in Department for Transport Analysis Guidance (TAG) Unit A3 guidance[6].

Table 14.1 Criteria for Sensitivity of Receptor

Sensitivity of Receptor	Criteria	Example
Very High	Feature with high quality and rarity, national scale and limited potential for substitution	Aquifer providing potable water to large population (groundwater) Important fish population (surface water) Floodplain or defence protecting more than 100 residential properties (flood risk) SPZ1 Essential infrastructure or highly vulnerable development
High	Feature with high quality and rarity, local scale and limited potential for substitution Feature with a medium quality and rarity, regional or national scale and limited potential for substitution	WFD high status water body (surface water) Aquifer providing potable water to a small population (groundwater) Notable fish population (surface water) Floodplain or defence protecting up to 100 residential properties or industrial premise (flood risk) SPZ2 More vulnerable development
Medium	Feature with a medium quality and rarity, local scale and limited potential for substitution Feature with a low quality and rarity, regional or national scale and limited potential for substitution	WFD good status water body (surface water) Aquifer providing abstraction water for agricultural or industrial use (ground water) Floodplain or defence protecting up to 10 industrial premises (flood risk) SPZ3 Less vulnerable development
Low	Feature with a low quality and rarity, local scale and limited potential for substitution	WFD less than good status (surface water) Unproductive strata (groundwater) Floodplain with limited existing development (flood risk) Water compatible development

Magnitude of Impact

14.21 The magnitude of impact is established based on the likely degree of impact relative to the nature and extent of the Proposed Development. Table 14.2 below shows the criteria for each magnitude of impact. The table has been developed and criteria defined based on the indicators set out in Department for Transport TAG Unit A3 guidance.

Table 14.2 Magnitude of Impact

Magnitude of Impact	Criteria	Examples
High	Results in loss or gain of feature/receptor	Loss of important fishery Change in WFD classification of river reach Compromise employment source Loss of flood storage/increased flood risk Pollution of potable source of abstraction Removal of major existing polluting discharge to a watercourse Major reduction in flood risk
Medium	Results in medium impact on integrity of feature or loss or gain of part of feature/receptor	Loss of productivity of a fishery Contribution of a significant proportion of effluent in the receiving river, but insufficient to change its WFD classification Reduction in the economic value of the feature Enhance productivity of a fishery Reduction in a significant proportion of the effluent in a receiving river, but not sufficient to change its WFD classification Moderate reduction in flood risk
Low	Results in low impact feature/receptor	Measurable change in feature, but to limited size and/or proportion
Negligible	Results in an impact on feature/receptor but of insufficient magnitude to affect the use/integrity	Discharges to watercourse but no significant loss in quality, fishery productivity or biodiversity No increase in flood risk

Defining the Effect

14.22 The geographic extent of the potential effects are defined as per the following:

- **Local scale** refers to effects upon receptors within the immediate vicinity of the site, typically confined to the development area and its immediate surroundings;
- **District scale** applies to effects upon receptors within the boundary of the relevant local planning authority (borough or district council level);
- **Regional scale** refers to effects upon receptors that extend beyond a single district or borough, affecting a wider area managed at a county or regional level. This includes major infrastructure, water catchments, or ecological networks that span multiple local areas; and
- **National scale** includes effects upon receptors of national importance, which have implications across the entire country, such as strategic flood risk areas designated by national agencies or infrastructure of national significance.

14.23 For the purposes of the ES, effects that are generated as a result of the enabling, demolition and construction works are classed as temporary. These may be further classified as either short term (duration of several days to weeks), medium-term (duration of several weeks to months) or long-term (several months to a year) effects. Effects that are generated as a result of the completed Proposed Development are classed as long- term and permanent.

14.24 The assessment also identifies whether the effect is 'direct' (i.e. resulting without any intervening factors) or 'indirect' or 'secondary' (i.e. not directly caused or resulting from something else).

14.25 The scale of the potential effect is derived by combining the assessments of both the sensitivity of the receptor and the magnitude of the impact in a simple matrix (see Table 14.3).

6 Department for Transport Analysis Guidance Unit A3 – Environmental Impact Assessment, dated May 2025 https://www.gov.uk/government/publications/tag-unit-a3-environmental-impact-appraisal

Table 14.3 Effect Significance Matrix

Magnitude of Potential Impact	Importance of the Feature / Sensitivity of Receptor			
	Very High	High	Medium	Low
High	High	High	Medium	Low
Medium	High	Medium	Low	Negligible
Low	Medium	Low	Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Categorising Likely Significant Effects

14.26 Effects that are classified as major or moderate adverse/beneficial are deemed significant effects. Effects that are classified as minor or negligible adverse / beneficial are classed as not significant

BASELINE CONDITIONS

Existing Baseline

Topography

14.27 The topography of the site, shows levels ranging from approximately 21m Above Ordnance Datum (AOD) at the eastern end to around 12m AOD at the western end of the site, north of Brook Leys. There are localised spoil heaps with elevations reaching 30m AOD which do not cause blockages at the site as it maintains to have a general fall towards the western end of the site – these spoil heaps are temporary in nature and will be removed as part of any future development. Levels on the eastern side of Phase 1 have high points around the central area of approximately 25.5m AOD and fall towards both the west and east, reaching low points of approximately 21m AOD on either side. Site plans and flood mapping are contained in the FRA in **ES Volume 3, Appendix: Water Resources, Flood Risk and Drainage – Annex 4**.

Hydrology

14.28 The Washpit Brook is the closest watercourse to the site which runs through the site from south-east to the north-west. The extent of the brook that runs across the site is classed as an 'ordinary watercourse' with the downstream section of the brook beyond the site classed as EA 'main river'. Towards the upstream limit of the Washpit Brook, there is no single fixed channel, but a number of small field drains and/or local water bodies that eventually form the Washpit Brook.

Geology and Hydrogeology

14.29 The British Geological Survey (BGS) mapping indicates the vast majority of the site to be underlaid by a bedrock of Gault Formation – Mudstone with a small portion located on the south-east side of the site to be underlaid by West Melbury Marly Chalk Formation – Chalk. BGS mapping also shows the parts of the site to be overlaid by superficial Head deposits – clay, silt sand and gravel, with River Terrace Deposits present east of the site.

14.30 The Head superficial deposits are classified as Secondary (undifferentiated) aquifers and the River Terrace Deposits located to the east of the site are classified as Secondary A aquifers. The Gault Formation bedrock present is classified as an unproductive aquifer, while the West Melbury Chalk Formation is classified as a Principal aquifer.

14.31 The historical ground investigation and desk study undertaken as part of the 2013 OPP indicate groundwater levels between 0.90m and 3.80m below ground level (bgl) within the shallow gravel deposits and groundwater level of 19.45m bgl within the Gault Clay. Groundwater contained in the secondary aquifer may support flow to the Washpit Brook and there is therefore potential for pollutants to be transmitted to the groundwater. Groundwater within the Principal Aquifer may support water supply and/or river base flow on a strategic scale.

14.32 There are no records of groundwater abstractions within the site and the site does not lie within a groundwater Source Protection Zone (SPZ). Groundwater abstractions for non-potable uses have been identified within 1km of the site as outlined in in **ES Volume 1, Chapter 13: Ground Conditions and Land Contamination**.

Flood Risk

14.33 The site is located largely within Flood Zone 1. Typically, areas within Flood Zone 1 have a less than 0.1% chance of flooding from rivers or the sea in any given year. There is a small area of the site adjacent to the Washpit Brook which is in Flood Zone 2 which has between a 1% and 0.1% chance of flooding from rivers and between a 0.5% and 0.1% chance of flooding from the sea.

14.34 A Flood Alleviation Scheme (FAS) has been implemented in full within the site as part of the Phase 1 (2013 OPP) works to ensure that the masterplan development does not result in increased flooding within the Washpit Brook catchment and provides a reduction in flood risk downstream. The FAS includes a flow control structure, consisting of a weir and a low flow pipe, designed to reduce downstream peak flow. Additionally, a two-stage channel has been constructed upstream of the flow control structure to store excess floodwater generated during peak flow events. This two-stage channel falls towards a low flow channel along the western boundary of the site, allowing for the drainage of any stored floodwater back into the Washpit Brook.

14.35 The EA map for surface water flooding indicates that the site is at low risk of surface water flooding with majority of the site outside of the flood extent map. Parts of the site is subject to high risk of surface water flooding (more than 3.3% chance each year). However, these are small localised areas and mostly within the greenfield areas adjacent to the Washpit Brook with flood depths of up to 300mm associated with more than 3.3% chance of surface water flooding.

14.36 The Greater Cambridge Integrated Water Management Study Level 1 SFRA notes that information from the Anglian Water DG5 register has been used to map incidents of sewer flood risk by postcode. The postcode 'CB3' has 3 recorded sewer flood incidents.

14.37 The BGS mapping for Areas Susceptible to Groundwater Flooding indicate that western portion of the site has potential for groundwater flooding of properties situated below ground level with small sections on the west end and south end shown to have limited potential for groundwater flooding to occur.

14.38 The site is in an area which is not at risk of flooding from reservoirs.

Public Sewers

14.39 Anglian Water sewer record plans indicate that there are two separate foul drainage networks that fall in an easterly and westerly direction from the high point, which are situated adjacent to the Reston property on the west side of the Girton Road/Huntingdon Road junction. This existing sewer is formed using vitrified clay pipes with a general diameter of 9". A 1200mm diameter foul trunk sewer is situated to the south-east of the site, which accommodates the discharge from the 300mm diameter sewers situated below Madingley Road and Huntingdon Road. The existing drainage on the site exists as part of the constructed Phase 1 of the 2013 OPP. The foul water drainage from previously constructed Phase 1 drains to the publicly owned 1200mm foul trunk sewer in Madingley Road via an on-site foul pumping station.

Potable Water Network

14.40 The site lies within an area which is defined by the EA (2021) as being under serious water stress. A new boosted potable water ring main has been constructed as part of the Phase 1 works to supply the development from a network approximately 1.5km south.

14.41 Cambridge Water has confirmed there is still reserved capacity in the potable water network for the 2013 OPP, however, local reinforcement of the potable water network may be required to provide capacity for any unit number increases over the original consent. The exact scale of any local reinforcement will be determined post-planning via network resiliency modelling undertaken by Cambridge Water. As part of this OPA, consultations

have taken place with Cambridge Water – copies of this consultation are contained in **ES Volume 3, Appendix: Water Resources, Flood Risk and Drainage – Annex 5**.

RECEPTORS AND RECEPTOR SENSITIVITY

Existing

14.42 Based on a review of the baseline conditions, the existing receptors likely to be affected by the Proposed Development and their sensitivity are shown in the Table 14.4 below.

Table 14.4 Existing Receptors and Sensitivity

Receptor	Sensitivity	Reason
Groundwater	Medium	Groundwater contained in the secondary aquifer may support flow to the Washpit Brook and there is therefore potential for pollutants to be transmitted to the groundwater. Groundwater within the Principal Aquifer may support water supply and/or river base flow on a strategic scale. However, there are no known abstractions within the site and nearby abstractions are for non-potable uses. The Greater Cambridge Integrated Water Management Study Level 1 SFRA map indicates a small area in the eastern extent of the site is subject to limited potential for groundwater flooding to occur. Based on above, groundwater has been assigned a value of Medium sensitivity.
Surface Water	Low	Most of the site is at low risk of flooding with localised areas at high risk of surface water flooding with depths of up to 300mm. Therefore, surface water has been assigned a value of Low sensitivity.
Public Drainage Network	High	The 1200mm diameter sewer in Madingley Road is classified as a trunk sewer serving large number of properties within Cambridge. Public drainage network has been assigned a value of High sensitivity.
Washpit Brook	Medium	It is considered that the watercourse is unlikely to be of national or regional importance. The watercourse is draining mostly fields and surface water runoff from construction of Phase 1. The watercourse may be important to local wildlife and as such the watercourse has been assigned a value of Medium sensitivity.
Potable Water Supply	High	The site is in an area as being under serious water stress by the EA. Therefore, potable water supply has been assigned a value of High sensitivity.
Existing Site (Fluvial Flood Risk)	Low	The vast majority of the site is in Flood Zone 1 with a small area in Flood Zone 2. A flood alleviation scheme comprising of a two-stage channel with flow control structure running parallel to the Washpit Brook within the site was fully implemented as part of the Phase 1 works to ensure that the completed development in its entirety does not result in increased flooding. Based on above, the existing site has been assigned a value of Low sensitivity.

Introduced

14.43 The receptors that are being introduced on the site as part of the Proposed Development in addition to the existing receptor are shown in Table 14.5 below:

Table 14.5 Introduced Receptors and Sensitivity

Receptor	Sensitivity	Reason
Proposed Development (Fluvial Flood Risk)	High	The Proposed Development has a vulnerability classification of ''More vulnerable'' classification as the it mainly comprises of residential units and non-residential spaces for health services, nurseries and educational establishments. All residential units will be located within Flood Zone 1 and therefore, the Proposed Development has been assigned a value of High sensitivity.

EMBEDDED MITIGATION

14.44 Mitigation measures embedded within the design proposals to avoid, reduce or mitigate the potential environmental impacts have been identified. These are outlined in the following sections.

Enabling, Demolition and Construction

Construction Environment Management Plan (CEMP)

14.45 An Outline Construction Environmental Management Plan (CEMP) has been developed to provide a framework of measures that will be further developed and implemented via detailed CEMPs, secured by planning condition, prior to any works starting on-site, in agreement with the Greater Cambridge Planning Service (GCPS). The CEMP aims to provide management techniques to avoid, minimise and, where these are not possible, mitigate the magnitude of potential environmental impacts and thereby the likelihood of significant effects.

14.46 The CEMP will outline measures to protect surface and groundwater during the enabling, demolition and construction phase. This will include storage of any hazardous substances (including solids and liquids) within well-contained and secured bunded areas to remove the risk of migration to exposed groundwater or surface water runoff. Dewatering of any exposed groundwater is expected to be disposed appropriately in accordance with the EA requirements. Wheel wash facilities are expected to be provided for vehicles moving to and from the site to prevent unacceptable levels of silts and debris entering the surface water network. Construction plant/materials are anticipated to be stored on hardstanding surfaces where possible to minimise silts and debris within surface water runoff.

14.47 The CEMP will also include requirements to ensure appropriate consents/permits are obtained for any construction-phase discharges of waste (including waste water) and permits obtained as necessary e.g. under the Environmental Permitting Regulations 2010 (as amended). The CEMP will also outline requirements to ensure adequate water supply for the site during the enabling, demolition and construction phase.

Completed Development

Surface Water Drainage Strategy

14.48 A site-specific surface water drainage strategy (see **ES Volume 3, Appendix: Water Resources, Flood Risk and Drainage – Annex 4**) has been developed, which incorporates a cascading system of (SuDS to restrict, attenuate and improve the quality of surface water runoff from the Proposed Development prior to discharge to the Washpit Brook. The surface water runoff is proposed to discharge at a greenfield runoff rate of 2 l/s/ha up to and including the 1 in 100 year + 40% climate change (CC) event providing significant reduction in surface water runoff and reducing impact to the Washpit Brook.

14.49 Surface water attenuation will be provided in the form of detention basins and a combination of either swales or oversized pipes as part of the sitewide drainage network with on-plot attenuation provided within individual plots to limit the plot discharge rates. Two stages of treatment will be provided to ensure no pollution in terms of hydrocarbons or heavy particulates reaches the watercourse. A SuDS pollution cleansing chain uses planted swales to extract hydrocarbons from the runoff, and then the detention areas along the west of the development, north of Brook Leys, double as settlement areas removing the heavy particulates from the runoff. Alternatively, petrol interceptors will be provided to treat the surface water runoff if oversized pipes are used in place of swales. Additional SuDS features such as permeable paving will be considered as the strategy gets developed and as part of the future plot detailed design.

14.50 The surface water runoff that falls within public realm areas along the western extent of the site is expected to either infiltrate into the ground or discharge to the Washpit Brook via overland flow following the site topography as the area is envisaged to be soft landscaping and permeable similar to existing with no requirement for positive drainage or surface water restriction.

Foul Water Drainage Strategy

14.51 Foul water drainage is proposed to follow the same methodology as per the agreed foul water drainage strategy produced to discharge Condition 30 of the 2013 OPP, where foul flows from the plots will discharge to a series

of pumping stations before discharging into the foul drainage network constructed as part of Phase 1, ultimately being pumped into the Madingley Road trunk sewer via the existing Phase 1 foul pumping station. Three pumping stations are proposed to drain the foul flows from the Proposed Development to Phase 1 drainage network.

14.52 Foul flow rate by tenure is used to calculate the peak foul flow rates similar to the 2013 OPP as shown in Table 14.6 below. The peak foul flow rates calculation is based on:

- The Proposed Development Accommodation Schedule, as per the Illustrative Masterplan;
- 200 l/person/day for Studio, 1 bed and 2 bed units with maximum 3 persons per unit;
- 150 l/person/day for larger 2, 3 and 4 bed units with 4 to 6 persons per unit with ultimate flow rates capped to a maximum of 4000 l/unit/day;
- A peak factor of 6 is applied to residential flows; and
- 1.3 l/s/ha for non-residential units where the area is based on Gross Internal Areas (GIA) of the units.

Table 14.6 Foul Flow Rate by Tenure

Plot	Usage	Building Type	No. Units	Area (m^2)	Flow Rate (l/person/day)	Peak Flow Rate per Unit Type (Occupants x Flow Rate x 6)	Domestic			Non-Domestic Flows per Area
							Proposed Foul Peak Flow (l/day) (Max. 4000 l/day)	Proposed Foul Peak Flow Rate (l/s/unit)	Total Peak Flow (l/s)	
Multiple Plots	Market Housing	1B1P	45	-	200	1,200	1,200	0.01	0.63	-
		1B2P	317	-	200	2,400	2,400	0.03	8.82	-
		2B3P	91	-	200	3,600	3,600	0.04	3.78	-
		2B4P	464	-	150	3,600	3,600	0.04	19.32	-
		3B5P	261	-	150	4,500	4,000	0.05	12.09	-
		4B6P	353	-	150	5,400	4,000	0.05	16.32	-
		5B8P	64	-	150	7,200	4,000	0.05	2.97	-
Multiple Plots	Key Worker Housing	1B1P	644	-	200	1,200	1,200	0.01	8.95	-
		1B2P	752	-	200	2,400	2,400	0.03	20.88	-
		2B3P	0	-	200	3,600	3,600	0.04	0.00	-
		2B4P	696	-	150	3,600	3,600	0.04	29.09	-
		3B5P	54	-	150	4,500	4,000	0.05	2.49	-
		4B6P	0	-	150	5,400	4,000	0.05	0.00	-
A, B1, B2 and J	Academic / Commercial	-	-	91,885	-	-	-	-	11.95	1.3
H1 and J	Student	Studio	1,730	-	200	1,200	1,200	0.01	24.03	-

14.53 The peak foul flow rate generated by the Proposed Development is expected to be 161.3 l/s. Any increase in foul flows will be accommodated within the proposed foul drainage network prior to discharge to the wider Phase 1 drainage network, therefore not impacting the existing 1200mm trunk sewer downstream of Phase 1 pumping station.

14.54 The attenuation as well as emergency storage volume is proposed to be incorporated within the pumping station. The attenuation storage is based on the time it takes for the peak flow to generate volume equivalent to the volume generated by a dry weather flow (average daily flow to a wastewater treatment works without rain) over a day. This is estimated to be 4 hours where the dry weather flow is estimated to be 1/6th of the peak foul flow. The emergency storage is based on the dry weather flow of the plots draining into each pumping station over an eight-hour duration.

14.55 There are no additional points of connection proposed to the wider Anglian network, and the previously agreed discharge rate of 42l/s as part of the 2013 OPP shall not be exceeded as part of the Proposed Development. It is to be noted that modelling undertaken by Anglian Water during the Phase 1 development works suggest that the Madingley Road trunk sewer could receive up to 75l/s, however the foul discharge rate from the Proposed Development is still being restricted to the previously agreed rates.

14.56 The outline foul drainage proposals can be found in **ES Volume 3, Appendix: Water Resources, Flood Risk and Drainage – Annex 2**. The above proposals have been discussed with Anglian Water and were well received. A pre-planning enquiry was also submitted to Anglian Water and response have been received confirming capacity to serve the proposed foul flows the site. A copy of the pre-planning enquiry is contained in **ES Volume 3, Appendix: Water Resources, Flood Risk and Drainage – Annex 4**

Potable Water Demand Reduction Strategy

14.57 To address the water consumption needs of the Proposed Development while ensuring environmental sustainability, both potable and non-potable water systems will be utilised. The Proposed Development will limit potable water usage to 80l/person/day due to the water-stressed nature of Cambridge area, as per the 2013 OPP. The potable water supply will be supported by the booster ring main infrastructure established during Phase 1 and extended to serve the Proposed Development, with the remainder being served via water saving measures and the on plot non-potable water collection and distribution networks. The non-potable system will capture rainwater from roofs and store it locally on-site in underground tanks which will be connected to the potable water network to ensure continuity of supply. Non-potable water supply has been based on roof runoff only, as runoff from other plot areas has the potential for contamination risks, such as oils and hydrocarbons, which would require treatment prior to entering the non-potable storage system and increase infrastructure requirements.

Flood Risk Assessment

14.58 A site-specific flood risk assessment (FRA) (**ES Volume 3, Appendix: Water Resources, Flood Risk and Drainage – Annex 4**) has been undertaken in accordance with the National Planning Policy Framework (NPPF) and planning policies identifying the potential sources of flooding and how residual flood risk will be managed without causing flood risk elsewhere. Flooding from fluvial, surface water (pluvial), groundwater, sewer and artificial sources i.e. reservoirs have been assessed to and from the site.

14.59 All habitable buildings within the Proposed Development will be located within Flood Zone 1. The FAS constructed as part of Phase 1 works provide storage of excess floodwater generated during peak flows and reduces the risk of flooding downstream. The hydraulic modelling of the Washpit Brook undertaken as part of the 2013 OPP has been updated to incorporate the higher climate change allowance and ReFH2 rainfall-runoff method[7]. The updated model show that the FAS still provide betterment to downstream flood risk and therefore, the fluvial flood risk is considered to be low. The FRA also deemed flooding from surface water (pluvial), groundwater, sewer and artificial sources low.

[7] *The Revitalised Flood Hydrograph Rainfall-Runoff Method Version 2 (ReFH2) https://refhdocs.hydrosolutions.co.uk/The-ReFH2-Model/Introduction/*

POTENTIAL EFFECTS

Enabling, Demolition and Construction

Washpit Brook

14.60 The most significant risk to the Washpit Brook during enabling, demolition and construction works is from development site run-off containing elevated suspended sediment levels. Elevate sediment levels can be generate by activities such as land clearance and soil stripping, movement and storage of materials to and from the site, and from other construction activities (for example wheel washing). Spillages from construction vehicles may contaminate the surface water runoff that eventually discharge to the Washpit Brook. These activities will be prevalent when the site is prepared for construction and during the construction of the different phases.

14.61 However, these activities will be managed through measures outlined in the CEMP, to be conditioned, prior to any works starting on-site. The measures will include appropriate construction management practices in addition to the provision of sediment traps and pollution control interceptors to remove suspended solids and hydrocarbons generated by the disturbance and clearance of land during the demolition, enabling and construction phase. The CEMP will also include requirements of appropriate permits for the construction phase discharges. Therefore, the magnitude of impact on Washpit Brook is assessed to be low. The sensitivity of the Washpit Brook is assessed to be medium. Based on above, the effect on Washpit Brook will be Negligible (not significant).

Surface Water

14.62 The enabling, demolition and construction works may impact the existing site levels as a result of excavation and below ground works. It has potential to pose temporary and localised surface water flooding. Temporary roads will be provided to accommodate the movement of vehicles and heavy plant during the construction phase in order to remove the potential for soil to be compacted and for the runoff rate to be increased due to the soils decreased permeability. Surface water runoff will be controlled, intercepted and conveyed via temporary drainage system with appropriate sediment removal traps and oil interceptors. Measures such as reseeding of cleared land where appropriate as soon as practicable to minimise exposed land and reduce localised ponding of surface water will be implemented. Construction plant/materials should be stored on hardstanding surfaces where possible to minimise silts and debris within surface water runoff. This would prevent increases in the volume of run-off from the site during rainfall events and any consequential effects on properties downstream of the site. Therefore, the magnitude of impact is assessed to be low. The sensitivity of the surface water is assessed to be low. Based on above, the effect on surface water will be Negligible (not significant).

Public Drainage Network

14.63 There is potential for a minor increase in foul water discharge during these work when compared to the existing site, however the increase will be deminimus with respect to the foul flow generated by the Proposed Development once completed. Pre-planning response from Anglian Water confirmed capacity within the public sewer to serve the Proposed Development and therefore, the slight increase in foul flow during the enabling, demolition and construction works is expected to only have a negligible scale impact on the capacity of public drainage network. The foul and surface water discharge during the enabling, demolition and construction phase will be managed through standard construction practice in the CEMP, to be conditioned. Therefore, the magnitude of the impact on public drainage network is assessed to be negligible. The sensitivity of the public drainage network is assessed to be high. Based on above, the effect is assessed to be Negligible (not significant).

Groundwater

14.64 Excavation and substructure works may expose shallow groundwater, particularly in the lower-lying areas of the site increasing the risk of groundwater flooding and potential risk of groundwater contamination. However, this will be managed through standard construction practice in the CEMP, to be conditioned. The CEMP will include measures such as storage of any hazardous materials within impermeable bunded areas to remove the risk of migration to exposed ground water, dewatering of exposed groundwater, etc. Any pumped groundwater will be treated appropriately and disposed appropriately in accordance with discharge consent requirements. Therefore, the magnitude of the impact on groundwater is assessed to be low. The sensitivity of the groundwater is assessed to be medium. Based on above, the effect on groundwater will be Negligible (not significant)

Existing Site (Fluvial Flood Risk)

14.65 As the site is mostly in Flood Zone 1, most of the enabling, demolition and construction works will be within Flood Zone 1 areas. A small area north-west of the site is in Flood Zone 2, however these areas are predominantly open land areas and a small extent of a development plot in the north-east. Appropriate measures and permits for working near a watercourse will be obtained in line with the CEMP, to be conditioned, prior to works starting on-site. The modelled water level within the Washpit Brook in the north-east area for 1 in 100 year +25% climate change flood event is approximately 12.64m AOD. The existing ground level adjacent to the Washpit Brook is approximately 12.66m AOD with lower levels nearer the brook. Therefore, the magnitude of impact is assessed to be low. The sensitivity of the existing site is assessed to be low. Based on above, the effect on the existing site is assessed to be Negligible (not significant).

Potable Water Supply

14.66 Construction activities may lead to a temporary increase in demand on the potable water supply network, however, the increase is expected to be minor. The potable water demand during the enabling, demolition and construction phase will be managed through standard construction practice in the CEMP, to be conditioned. The CEMP will outline requirements to ensure adequate water supply to the site. Therefore, the magnitude of the impact on potable water network is assessed as being low. The sensitivity of the potable water supply is assessed as High. The magnitude of impact is assessed as low. Based on above, the effect on potable water is assessed to Minor Adverse (not significant). The effect is considered to be local, temporary (long-term) and direct.

Completed Development

Washpit Brook

14.67 The completed Proposed Development will implement SuDS where surface water runoff will be treated and restricted to greenfield runoff rate prior to discharge to the Washpit Brook. The FAS implemented in full as part of Phase 1 works provide storage of excess floodwater reducing the water level along the Washpit Brook during peak flow events. Therefore, the magnitude of the impact on the Washpit Brook is assessed to be negligible. The sensitivity of the Washpit Brook is assessed to be medium. Based on above, the effect on Washpit Brook will be Negligible (not significant).

Surface Water

14.68 The completed Proposed Development will result in increased surface water runoff and pollutants from the hardstanding areas. The Proposed Development will incorporate SuDS and flow control measures to reduce the peak surface discharge rates to greenfield runoff rate and treat the runoff prior to discharge to the Washpit Brook. These measures are designed to ensure that surface water flows are managed effectively, minimising the risk of localised flooding. Therefore, the magnitude of the impact on the surface water is assessed to be

negligible. The sensitivity of surface water receptors is assessed to be low. Based on above, the effect on surface water will be Negligible (not significant).

Public Drainage Network

14.69 The foul flows from the completed Proposed Development will discharge to the proposed foul network and pumping stations by gravity before being pumped to the constructed Phase 1 drainage network. The Phase 1 pumping station will ultimately pump to the 1200mm diameter trunk sewer in Madingley Road at the previously agreed discharge rate with Anglian Water as part of the 2013 OPP. The downstream connection from the Phase 1 pumping station has been constructed as part of the Phase 1 works and therefore, the proposed foul drainage strategy does not result in any new connection or works to the Anglian Water sewers.

14.70 The increase in foul flows from the Proposed Development will be restricted within the proposed pumping stations to not exceed the allowable rates within the constructed Phase 1 drainage network. A pre-planning enquiry was submitted to Anglian Water which confirmed capacity to serve the foul flows from the Proposed Development. The foul drainage from the Proposed Development is within the catchment of Cambridge Water Recycling Centre which currently does not have capacity to treat the flows from the site. However, Anglian Water has confirmed application to the Environment Agency for an interim new permit to address the exceedance and further necessary steps to ensure capacity to accommodate the flows will form part of Anglian Water plans which includes Cambridge Wastewater Treatment Plant Relocation. There are no proposals to discharge to surface water sewers. Therefore, the magnitude of the impact on the public drainage network is assessed to be low. The sensitivity of public drainage network is assessed to be high. Based on above, the effect on public drainage network water is assessed to be direct, temporary (long term) and Minor Adverse (not significant).

Groundwater

14.71 The surface water drainage strategy does not propose infiltration into the ground due to the presence of shallow groundwater and the majority of the site is underlain by Gault Formation. The site is not located in a SPZ and there are no groundwater abstractions proposed within the site. The risk of groundwater flooding is assessed to be low. Therefore, the magnitude of impact to groundwater is assessed to be Negligible. The sensitivity of groundwater is assessed to be medium. Based on above, the effect on groundwater will be Negligible (not significant).

Proposed Development (Fluvial Flood Risk)

14.72 The Proposed Development is mostly in Flood Zone 1 with a small area in the north-east in Flood Zone 2. The area within Flood Zone 2 is mostly open areas and non-residential development parcel. All habitable buildings will be located within Flood Zone 1. The surface water drainage for the completed Proposed Development will reduce the surface water runoff rates to greenfield runoff rates to further prevent increased discharge to the Washpit Brook. The FAS implemented as part of the Phase 1 works reduces the risk of flooding downstream of the site. Therefore, the magnitude of impact to the Proposed Development is assessed to be negligible. The sensitivity of the Proposed Development is assessed to be high. Based on above, the effect on Proposed Development will be Negligible (not significant).

Potable Water Supply

14.73 The completed Proposed Development will comprise of a strategic potable water network connected to the potable water infrastructure installed as part of the Phase 1 works. The Proposed Development will limit potable water use to 80 l per person per day as per the 2013 OPP, with the remainder being served via water saving measures and the on plot non-potable water collection and distribution networks. Discussions were held with Cambridge Water to determine the availability of potable water in the local grid. Cambridge Water confirmed that there was sufficient capacity to accommodate the number of dwellings within the 2013 OPP and that there may be a requirement for local infrastructure reinforcement to accommodate any uplift in unit numbers, but this would be subject to an infrastructure modelling study during the detailed design phase.

14.74 It is anticipated that the preparation of a detailed potable water strategy will be conditioned and include further discussions with Cambridge Water to address the capacity to serve the uplift in units compared to the 2013 OPP. The correspondence with Cambridge Water contained in **ES Volume 3, Appendix: Water Resources, Flood Risk and Drainage – Annex 5** suggests that any potential infrastructure upgrades required to support the uplifts in units will be minor and limited to the local area, with no strategic or significant upgrades required. Therefore, the magnitude of impact on potable water is assessed to be low. The sensitivity of potable water is assessed to be high. Based on above, the effect on potable water is assessed to be direct, permanent and Minor Adverse (not significant).

MITIGATION, MONITORING AND RESIDUAL EFFECTS

14.75 Based on the assessment, this section outlines the mitigation measures proposed that are over-and-above the embedded mitigation measures described previously.

Enabling, Demolition and Construction Mitigation

14.76 Effects during enabling, demolition and construction phase are assessed to be not significant. Based on this, it is envisaged that no further mitigation and monitoring measures are required.

Completed Development Mitigation

14.77 The SuDS systems designed for the Proposed Development will require ongoing maintenance to ensure they function effectively. Poor maintenance can lead to blockages and overflows, increasing the risk of overland or surface water flooding. Maintenance requirements for drainage and SuDS will be developed during detailed design, secured by planning condition in accordance with best practice guidance from the CIRIA SuDS Manual[8].

Residual Effects

14.78 All of the residual effects resulting from the Proposed Development, are presented in Table 14.7, identifying whether the effect is significant or not.

[8] *The Construction Industry Research and Information Association Sustainable Urban Drainage Systems Design Manual*

Table 14.7 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Enabling, Demolition and Construction							
Washpit Brook	Increased sediments and contaminants within the runoff discharging to the watercourse.	Negligible	Not Significant	L	D	T	Lt
Groundwater	Exposed shallow groundwater, Risk of groundwater contamination from construction activities	Negligible	Not Significant	L	D	T	Lt
Surface Water	Construction activities resulting in increased surface water runoff and increased presence of sediments and pollutants within the runoff	Negligible	Not Significant	L	D	T	Lt
Public Drainage Network	Slight increase in flow flows from the welfare areas.	Negligible	Not Significant	L	D	T	Lt
Existing Site (Fluvial Flood Risk)	Site is mostly in Flood Zone 1 with small area north-east in Flood Zone 2.	Negligible	Not Significant	L	D	T	Lt
Potable Water Supply	Liaison with Cambridge Water suggests that any infrastructure upgrades will be small scale and local.	Minor Adverse	Not Significant	L	D	T	Lt
Completed Development							
Washpit Brook	Proposed surface water runoff discharge to the watercourse	Negligible	Not Significant	L	D	P	Lt
Groundwater	No infiltration proposed. Site does not lie in a SPZ.	Negligible	Not Significant	L	D	P	Lt
Surface Water	SuDS to reduce the surface water runoff to greenfield runoff rates and provide treatment.	Negligible	Not Significant	L	D	P	Lt
Public Drainage Network	Increase foul flow restricted and attenuated within the proposed foul drainage network. Confirmation of capacity within the public sewer to serve foul flows from the Proposed Development.	Minor Adverse	Not Significant	L	D	P	Lt
Proposed Development (Fluvial Flood Risk)	Fluvial flood risk assessed to be low. All habitable buildings located within Flood Zone 1.	Negligible	Not Significant	L	D	P	Lt
Potable Water	Potable water use limited to 80l/p/day with remainder being served via water saving measures and on plot non-potable water collection and distribution networks.	Minor Adverse	Not Significant	L	D	P	Lt

Notes:

Residual Effect

- Scale = Negligible / Low / Medium / High
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)

D = Direct / I = Indirect

P = Permanent / T = Temporary

St = Short Term / Mt = Medium Term / Lt = Long Term

N/A = not applicable / not assessed

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

14.79 The site is currently mostly greenfield. If the site is to remain as existing, the existing baseline conditions are likely to remain unchanged. Surface water runoff from the site will continue to either percolate into the ground or discharge towards the Washpit Brook via overland flow. There would be no change to the flood risk as the site remains as existing. Surrounding cumulative schemes are expected to implement appropriate mitigation measures to prevent increased of flooding to the site from respective schemes.

Cumulative Effects Assessment

14.80 This section of the chapter assesses the potential effects of the Proposed Development in combination with the potential effects of other development schemes (referred to as 'cumulative schemes') within the surrounding area, as outlined within **ES Volume 1, Chapter 2: EIA Methodology**.

Enabling, Demolition and Construction

14.81 The construction of the surrounding cumulative schemes is expected to be carried out in accordance with their respective CEMP which will include measures to prevent impact on on-site and off-site receptors. On this basis, it is considered that the cumulative effects relating to water resources, flood risk and drainage is considered to be Negligible (not significant)

Completed Development

14.82 The surrounding developments are expected to implement SuDS and restrict surface water runoff in line with the local plan and planning policies preventing impact on downstream flood risk. Based on above, the cumulative effect on surface water, groundwater and Proposed Development is assessed to be Negligible

14.83 The Proposed Development and surrounding schemes will result in increased foul discharge to the public sewers and impose additional demand on the potable water supply. However, these schemes are either submitted for planning or in construction phase and therefore, appropriate discussions with the relevant authorities is expected to have undertaken allowing the authorities to plan to serve all of the schemes and agree mitigation measures where required. Correspondence with Cambridge Water as part of this planning application suggests that the potable water demands for the uplifted development can be accommodated with minimal local infrastructure enhancements, and correspondence with Anglian Water via a pre-planning enquiry confirms that there is sufficient capacity to receive the predicted foul flows from the Proposed Development. Based on above, the cumulative effect on public drainage network and potable water is assessed to be Minor Adverse (not significant).

LIKELY SIGNIFICANT EFFECTS

14.84 No likely significant effects on water resources, flood risk and drainage are identified with the implementation of embedded mitigation measures as a result of the Proposed Development or cumulative schemes.

ANNEX 1: LEGISLATION, PLANNING POLICY AND OTHER RELEVANT STANDARD GUIDANCE

14.85 This assessment has been undertaken taking into account relevant legislation and guidance set out in national, regional and local planning policy (summarised in the sections below and within **ES Volume 3, Appendix: Water Resources, Flood Risk and Drainage**). The legislation and policy requirements have informed the preparation of **ES Volume 1, Chapter 14: Water Resources, Flood Risk and Drainage**.

National Legislation

Water Act, 2014

14.86 The Water Act was published in 2014. The aim of the Act was to reform the water industry to make it more innovative and responsive to customers and to increase the resilience of water supplies to natural hazards such as droughts and floods.

14.87 Policies and objectives which are of particular relevance to flood risk and drainage include:

- "To enable developers and any new water or sewage companies to connect new building developments to the water mains and sewage system; and
- Provide measures to restore sustainable abstraction of water and the encouragement for the use of Sustainable Drainage Systems (SuDS)."

Land Drainage Act, 1991

14.88 The Land Drainage Act was published in 1991 and requires that a watercourse be maintained by its owner in such a condition that the free flow of water is not impeded. It provides the general guidance of the flood risk management works.

Flood and Water Management Act, 2010

14.89 The Flood and Water Management Act was implemented in 2010 to help improve flood risk management and ensure the security of water supplies in England and Wales. The Act updates legislation to ensure better protection from flooding, manage water more sustainably, improve public services and secure water resources during periods of drought.

14.90 The Act aims to:

- reduce the likelihood and impacts of flooding;
- improve authority ability to manage the risk of flooding;
- improve water quality;
- give water companies better powers to conserve water during drought;
- reduce red tape and other burdens on water and sewerage companies;
- improve the overall efficiency and management of the industry; and
- reduce pollution

Flood Risk Regulations, 2009

14.91 The Flood Risk Regulations 2009, implement the European Floods Directive and require the Lead Local Flood Authority (LLFA)and the EA to prepare and publish Flood Risk Management Plans on a six-year cycle.

14.92 The regulations identify and take action in areas with the most significant flood risks and require the following to be produced:

- Preparation of a Preliminary Flood Risk Assessment Report (PFRA) including the identification of flood risk areas;
- Preparation of Flood Hazard Maps and Flood Risk Maps;
- Preparation of Flood Risk management Plans; and
- Cooperating with the EA and other LLFAs.

Chapter 15: Climate Change and Greenhouse Gases

TRIUM

CLIMATE CHANGE AND GREENHOUSE GASES	
AUTHOR	AECOM Ltd
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Climate Change and Greenhouse Gases** Annex 1: Climate Change Risk Assessment (CCRA)
KEY CONSIDERATIONS	Key areas which have been considered in the assessment of Climate Change and Greenhouse Gases include the following: • Life Cycle greenhouse gas (GHG) impact assessment - Impact of GHG emissions arising from the Proposed Development on the climate. • Climate change risk assessment (CCRA) - Identify the likelihood of future climate hazards and their potential impact on the Proposed Development.
CONSULTATION	An EIA Scoping Report was prepared and submitted to Greater Cambridge Shared Planning Service (GCSPS) in November 2024 (**ES Volume 3, Appendix: EIA Methodology – Annex 1**). An EIA Scoping Opinion was subsequently received on 23 January 2025 and is included within **ES Volume 3, Appendix: EIA Methodology – Annex 2**. This generally agreed with the scope of this ES chapter. The following comment was provided within the EIA Scoping Opinion in relation to climate change and greenhouse gases: • *"It is recommended as a baseline that the climate risks highlighted in the UK Climate Change Risk Assessment 2022 be used, with particular reference to Priority Risk Area 7 (risks to human health, wellbeing and productivity from increased exposure to heat in homes and other buildings) as well as flood risk and risks associated with land instability."* The climate risks reference Priority Risk Area 7 has been considered as part of the assessment.

15.1 This chapter of the ES reports the findings of an assessment of the likely significant effects of the Proposed Development on climate and of future climate change impacts on the resilience of the Proposed Development, during construction and operation.

15.2 To align with the requirements of the 2017 EIA Regulations[1] and IEMA Guidance for assessing climate change mitigation[2] and adaptation[3], consideration has been given to the three aspects of climate change assessment as detailed in Table 15.1

Table 15.1 Definition of the Elements of the Climate Change Assessment

Assessment Type	Definition
Life Cycle greenhouse gas (GHG) impact assessment	Impact of GHG emissions arising from the Proposed Development on the climate.
Climate change risk assessment (CCRA)	Identify the likelihood of future climate hazards and their potential impact on the Proposed Development.
In-combination climate change impact (ICCI) assessment	The combined impact of the Proposed Development and potential climate change on the receiving environment.

15.3 The Climate Change Risk Assessment (CCRA) has been scoped into the ES (forming Part A of this ES chapter), with the climatic parameters listed in Table 15.6 being considered.

15.4 As detailed in the EIA Scoping Report (**ES Volume 3, Appendix: EIA Methodology – Annex 2**) the Greenhouse Gas (GHG) assessment has also been scoped into the ES, and forms Part B of this ES chapter.

15.5 A separate In-combination Climate Change Impact (ICCI) assessment, which considers the combined effect of a proposed scheme and potential climate change impacts on the receiving environment during construction and operation, has been **scoped out** on the basis that no potentially significant impacts were identified during the EIA scoping process.

LEGISLATION, POLICY AND GUIDANCE

15.6 This section sets out the legislation and planning policy that is relevant to the GHG assessment and the CCRA.

15.7 A brief non-exhaustive overview of the legislation, national planning policy, local planning policy, and additional standards and guidance that are relevant to the climate change assessment for the Proposed Development is summarised below.

Legislation

The United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement [4]

15.8 The Paris Agreement (enforced since 2016) is a legally binding agreement within the UNFCCC dealing with GHG emissions mitigation, adaptation and finance starting in the year 2020. It requires all signatories to set a target known as the nationally determined contribution (NDC), which strengthens their climate change mitigation efforts to keep global warming to well below 2°C this century and to pursue efforts to limit global warming to 1.5°C. The agreement contains a 'ratchet' mechanism by which NDCs must be strengthened every five years.

EU Directive 2014/52/EU on the Assessment of the Effects of Certain Public and Private Projects on the Environment [5]

15.9 As of May 2017, an environmental impact assessment (where relevant) must include assessment of the impact of a Proposed Development on climate change (for example, the nature and magnitude of GHG emissions).

The Climate Change Act (2008) (As Amended)

15.10 The Climate Change Act 2008[6] (hereafter referred to as the 'Act') provides a framework to meet the UK's GHG emission reduction goals through legally binding national carbon emission caps within five-year periods. The Act was amended in 2019 to revise the existing 80% reduction target and legislate for 100% reduction in net emissions by 2050 (i.e. net zero) (which was implemented via the 2050 Target Amendment Order 2019)[7].

UK Carbon Budgets [8]

15.11 The Carbon Budgets Orders 2009, 2011, 2016 and 2021 set five-yearly, legally binding, carbon budgets. The first five carbon budgets cover to 2032 and follow a trajectory for the UK to meet an 80% carbon reduction target. In December 2020, the Committee on Climate Change published its recommendations for the 6th carbon budget (covering 2033 to 2037) of 965 $MtCO_2e$, denoting a reduction in GHG emissions of 78% by 2035 relative to 1990, reflecting the amended trajectory to net zero by 2050. The 6th carbon budget was legislated for in June 2021 and is the first carbon budget to align with net zero.

15.12 The 7th Carbon Budget has been submitted to the UK Government by the Climate Change Committee (CCC). The UK's 7th carbon budget, which covers the period from 2038 to 2042, will be set by the government by June 2026.

[1] *His Majesty's Stationery Office (HMSO) (2017); 'The Town and Country Planning (Environmental Impact Assessment) Regulations 2017'.*
[2] *Institute of Environmental Management and Assessment (IEMA) (2022); 'Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance' 2nd Edition*
[3] *Institute of Environmental Management and Assessment (IEMA) (2020); 'Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation'.*
[4] *UNFCCC (2015); 'Paris Agreement'. [Online]. Available at: https://unfccc.int/sites/default/files/english_paris_agreement.pdf*
[5] *European Union (2014); 'Directives' [Online]. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0052&from=EN*
[6] *Department for Business, Energy and Industrial Strategy (2019); 'The Climate Change Act 2008' [Online]. Available at: https://www.legislation.gov.uk/ukpga/2008/27/contents*
[7] *Department for Business, Energy and Industrial Strategy (2019); 'The Climate Change Act 2008 (2050 Target Amendment)'. [Online]. Available at:https://www.legislation.gov.uk/ukdsi/2019/9780111187654/signature?view=plain*
[8] *Committee on Climate Change (2017); 'UK Carbon Budgets'*

The Future Home and Buildings Standards: 2023 Consultation[9]

15.13 The Ministry of Housing, Communities and Local Government (MHCLG) sought opinions and feedback regarding the proposed Future Homes Standard (FHS) and Future Buildings Standard (FBS). These standards aim to improve the energy efficiency of both new and existing buildings while reducing carbon emissions. The consultations suggest technical updates to Part L (Conservation of Fuel and Power) and Part 6 of the Building Regulations, which set out energy requirements for new constructions. The focus is on enhancing energy standards, improvements in commissioning fixed building services, and guidance for material changes of use. Additionally, stakeholders are requested to provide evidence on managing overheating in buildings (Part O). In addition, the Department for Energy Security and Net Zero released complementary consultations for refining the Home Energy Model (HEM), which will help assess compliance and further develop the standards, ensuring future buildings meet the UK's environmental goals.

National Planning Policy

National Planning Policy Framework (2024)[10]

15.14 The National Planning Policy Framework (NPPF) provides the Government's planning policies for England and how these are expected to be applied.

15.15 The NPPF introduces the presumption in favour of sustainable development at the heart of the framework, where Section 2, Paragraph 161, 164 and 166 states that local planning authorities should promote a sustainable pattern of development when creating plans and when assessing and determining development proposals. Paragraph 161 of the NPPF states that: *"The planning system should support the transition to net zero by 2050 and take full account of all climate impacts including overheating, water scarcity, storm and flood risks and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure."*

15.16 Paragraph 159 is of relevance with regards to new developments avoiding increased vulnerability to the range of impacts arising from climate change, and helping to reduce greenhouse gas emissions, such as through location, orientation and design, as is paragraph 162 with regards to new developments minimising energy consumption and complying with development plan policies on local requirements for decentralised energy supply if feasible.

Planning Practice Guidance (2023)[11]

15.17 In support of the NPFF, the Planning Practice Guidance (PPG) was updated to help projects implement the correct requirements into their projects. Only the renewable and low carbon energy guidance was updated for climate change, and the guidance for the climate change assessment remains the same.

A Green Future: Our 25-year Plan to Improve the Environment (2019)[12]

15.18 The 25 Year Environment Plan, published in January 2018 and updated in 2019, sets out the actions the UK Government will take to help the natural world regain and retain good health. It sets out how the Government will work with communities and businesses to improve the environment over the next 25 years. The goals include clean air, minimising waste and mitigation against climate change. The Environmental Improvement Plan, published in 2023, supersedes the 25 Year Environment Plan. The updated plan references Net Zero by 2050 instead of the 80 per cent reduction in total greenhouse gas emissions.

15.19 The Plan states: *"Five years ago, the 25 Year Environment Plan (25YEP) set out our vision for a quarter-of-a century of action to help the natural world regain and retain good health. We said we would refresh the plan every five years; a commitment set into law in the Environment Act 2021.This document represents the first such review of the 25YEP. It reinforces the intent of the 25YEP: where the 25YEP set out the framework and vision, this document sets out the plan to deliver"*

Net Zero Strategy (2021)[13]

15.20 The Government Net Zero Strategy: Build Back Greener, published on 19th October 2021, set out the approach government proposed to take to cut emissions and seize green economic opportunities, in order to meet the UK's Sixth Carbon Budget and Nationally Determined Contribution, cutting emissions by at least 68% by 2030 on 1990 levels, and reaching net zero by 2050.

15.21 Key policies of the strategy included: all electricity coming from low carbon generation by 2035, investment in hydrogen production to complement the electricity system, decarbonising heat and buildings, supporting the electrification of UK vehicles, increasing the share of journeys taken by public transport, cycling and walking and increasing the rate of woodland creation. There is also a mention of plans to improve reporting on embodied carbon in buildings and infrastructure with a view to exploring a maximum level for new builds in the future.

15.22 The strategy was subject to a successful legal challenge in July 2022. The Court has ordered the Government to prepare a report explaining how the policies and proposals in the NZS will enable the sixth carbon budget to be achieved by April 2023. In response to the judgement, the government updated the policies and commitments made in the strategy with the March 2023 Carbon Budget Delivery Plan. The delivery plan set out how the Government would meet the emissions reductions required for carbon budgets four to six (spanning 2023 to 2037).

15.23 A second legal challenge at the High Court in May 2024 found that the revised strategy (the Carbon Budget Delivery Plan) was unlawful in its assertion that the plans put forward would enable the UK to meet its carbon budgets. It ruled that the Government needed to prepare a revised plan by 2 May 2025. Following the announcement of the general election, this deadline was extended to October 2025.

Heat and Buildings Strategy (2021)[14]

15.24 The Heat and Buildings Strategy, published on 19th October 2021, sets out how the UK could wean itself off reliance on natural gas and other fossil fuels for heating domestic and commercial buildings, including plans to boost the installation of heat pumps and end gas boiler installations and plans to investigate heating using hydrogen.

15.25 Key policies include the intention to phase out the installation of new and replacement natural gas boilers by 2035 and enabling and encouraging carbon-free alternatives, in particular heat pumps and heat networks compatible with a range of low-carbon heat sources. New buildings should be designed to be fit for the future with low-carbon heat sources and high standards of energy efficiency, compliant with the Future Homes Standard and the Future Buildings Standard for England from 2025.

[9] *Department for Levelling Up, Housing & Communities (2023) Th Future Homes and Buildings Standards:2023 consultation. Available at: https://www.gov.uk/government/consultations/the-future-homes-and-buildings-standards-2023-consultation/the-future-homes-and-buildings-standards-2023-consultation*

[10] *Ministry of Housing, Communities and Local Government (2024); 'National Planning Policy Framework. [Online]. Available at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf*

[11] *Ministry of Housing, Communities and Local Government (2023); 'National Planning Policy Guidance: Climate Change'. [Online]. Available at: https://www.gov.uk/government/collections/planning-practice-guidance*

[12] *UK Government (2018); 'A Green Future: Our 25 Year Plan to Improve the Environment'. [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf*

[13] *UK Government, (2022); 'Net Zero Strategy'. [Online]. Available at: https://www.gov.uk/government/publications/net-zero-strategy*

[14] *UK Government, (2021); 'Heat and Buildings Strategy'. [Online]. Available at: https://www.gov.uk/government/publications/heat-and-buildings-strategy*

Other Relevant Policy, Standards and Guidance

British Standards

15.26 The British Standards Institution (BSI) BS EN ISO 14064-1:2019[15] and 14064-2:2019[16] provides specifications for organisational-level and project-level guidance for the quantification and reporting of GHG emissions and removals. These have been used within the GHG emissions calculation methodology.

15.27 BS EN 15978 Sustainability of Construction Works, Assessment of Environmental Performance of Buildings[17] sets out a calculation method to assess the environmental performance of a building, based on life cycle assessment for both new and existing buildings. It describes the object of assessment, system boundaries applicable at the building level, procedures used for inventory analysis, a list of indicators and procedures for calculation, reporting and data requirements.

Institute for Environmental Management and Assessment (IEMA) Guidance

15.28 The second edition of the 2022 Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance[2] provides the latest guidance on addressing GHG emissions assessment and mitigation in EIA.

15.29 In addition, IEMA guidance EIA Guide to Climate Change Resilience and Adaptation[18] provides a framework for the consideration of climate change resilience and adaptation in EIA and includes case studies of emerging good practice.

The World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD)[19]

15.30 The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard by the WRI and WBCSD provides comprehensive global standards and guidance for companies and other types of organisations in preparing a GHG inventory.

Royal Institute of Chartered Surveyors Professional Statement Whole Life Carbon Assessment[20]

15.31 The Royal Institute of Chartered Surveyors (RICS) Professional Statement Whole Life Carbon Assessment has been used to inform the GHG emissions calculation methodology. The professional statement provides a consistent whole life carbon assessment implementation plan and reporting structure for built projects in accordance with BS EN 15978: 2011: (Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method). The 2nd edition was published in September 2023 and became effective from July 2024.

The Carbon Trust PAS 2080:2023 Carbon Management in Infrastructure[21]

15.32 The Carbon Trust's PAS 2080 document provides guidance on calculating carbon emissions associated with infrastructure projects. PAS 2080 is an industry-standard methodology for assessing the carbon impact of infrastructure projects. It defines the lifecycle stages of a proposed development and forms the basis of the whole life carbon (WLC) assessment and the GHG impact assessment.

PART A: CLIMATE CHANGE RISK ASSESSMENT (CCRA)

ASSESSMENT METHODOLOGY

15.33 This section of the ES chapter presents the following:

- Climate change context and uncertainty;
- The methodology behind the CCRA, specifically the criteria for the determination of sensitivity of and magnitude of change from the existing of 'baseline' condition;
- An explanation as to how the identification and assessment of climate change impacts has been reached; and
- The significance criteria and terminology applied for the assessment of climate change residual effects.

15.34 The identification and assessment of CCRA within EIA is an area of emerging practice. There is no single prescribed format for undertaking such assessments; therefore, the approach adopted to undertaking and reporting the assessment has drawn on good practice from other similar developments and studies and is aligned with existing guidance such as that published by IEMA.

Context and Uncertainty

15.35 The Intergovernmental Panel on Climate Change (IPCC) has confirmed in its Assessment Reports that the anthropogenic influence on the climate system is clear and growing, with impacts observed across all continents and oceans[22].

15.36 Human activities have increased the concentration of CO_2 in our atmosphere, and according to the International Cryosphere Climate Initiative (ICCI), daily average atmospheric carbon dioxide (CO_2) levels have exceeded 430ppm as of March 2025, for the first time since records began, and likely for the first time in at least 3 million years.[23]

15.37 Given CO_2 is a GHG that absorbs and radiates heat, these increases have resulted in the warming of Earth's atmosphere. According to an ongoing temperature analysis by NASA, the average global temperature on Earth has increased by at least 1.47°C since 1880, the 10 most recent years being the warmest on record[24].

15.38 Globally, climate change is creating a more unpredictable and potentially turbulent environment for infrastructure and the communities it serves, through the prevalence of increased extreme heat days, more frequent and intense extreme weather events, extended periods of drought, and rising sea levels.

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[15] *BSI (2019); 'BS EN ISO 14064-1:2019. Greenhouse gases. Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals'. [Online] Available at https://knowledge.bsigroup.com/products/greenhouse-gases-specification-with-guidance-at-the-organization-level-for-quantification-and-reporting-of-greenhouse-gas-emissions-and-removals-2*

[16] *BSI (2019); 'BS EN ISO 14064-2:2019. Greenhouse gases. Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements'.[Online] Available at https://knowledge.bsigroup.com/products/greenhouse-gases-specification-with-guidance-at-the-project-level-for-quantification-monitoring-and-reporting-of-greenhouse-gas-emission-reductions-or-removal-enhancements-2*

[17] *BSI (2011); 'BS EN 15978:2011. Sustainability of Construction Works. Assessment of Environmental Performance of Buildings - Calculation Method'. [Online] Available at https://knowledge.bsigroup.com/products/sustainability-of-construction-works-assessment-of-environmental-performance-of-buildings-calculation-method*

[18] *Institute of Environmental Management and Assessment (IEMA) (2020); 'Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation'. [Online] Available at https://www.iema.net/media/mabhqino/iema-eia-climate-change-resilience-june-2020.pdf*

[19] *World Resources Institute (WRI) & World Business Council for Sustainable Development (WBCSD) (2004); 'The GHG Protocol: A Corporate Accounting and Reporting Standard' [Online] Available at https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf*

[20] *RICS professional standards and guidance, UK (2023); 'Whole life carbon assessment for the built environment, 2nd edition'. [Online]. Available at https://www.rics.org/profession-standards/rics-standards-and-guidance/sector-standards/construction-standards/whole-life-carbon-assessment*

[21] *BSI (2025), PAS Standard Carbon Management in Infrastructure and Built Environment - PAS 2080. [Online]. Available at https://www.bsigroup.com/en-GB/insights-and-media/insights/brochures/pas-2080-carbon-management-in-infrastructure-and-built-environment/*

[22] *IPCC (2023); 'Global warming of 1.5°C - Special Report'. [Online]. Available at: https://www.ipcc.ch/sr15/*

[23] *Internation Cryosphere Climate Initiative, 'March 12, 2025 – Record-breaking CO2 Levels a Grim Milestone for Earth's Polar Regions', [Online], Available at: https://iccinet.org/media-center/*

[24] *NASA (2024) Global Climate Change, Vital Signs of the Planet. Available at: https://climate.nasa.gov/vital-signs/global-temperature/?intent=121*

15.39 To understand how the global climate may change in the future, the IPCC's Fifth Assessment Report (AR5) developed Representative Concentration Pathways (RCPs) that describe four different 21st Century pathways of GHG emissions depending on the level of mitigation action undertaken between now and then. The RCPs are based on global research and existing literature and comprise a stringent mitigation pathway (RCP2.6), two intermediate scenarios (RCP4.5 and RCP6.0) and a high emissions scenario (RCP8.5). Figure 15.1 shows the emission trajectories and projected global temperatures up to 2100 in terms of the IPCC's RCPs. These emission pathways are used for developing climate change projections which can then be used by policymakers, scientists, and other professionals to estimate and plan for climate risks and impacts.

15.40 It is important to understand when using climate change projections, that they contain inherent uncertainty. This uncertainty is the result of limitations of available measurements and challenges in evaluating causation in complex and multi-component processes. Uncertainty in climate change projections is derived from multiple sources including:

- Uncertainty in how GHG emissions will change overtime due to key unknowns in the drivers of this change. Such drivers include economic and population growth, lifestyle and behavioural changes, associated changes in energy use and land use, technology, and climate policy; and
- Variable confidence levels in how well the climate models predict different climate variables. For example, climate models perform less well in their simulation of large-scale precipitation patterns than for surface temperature.

15.41 For these reasons, it is best practice to use a range of climate scenarios, when considering how the climate may change in the future. One RCP scenario (RCP 8.5) and three different timeframes were used in this CCRA, which will help provide decision makers with a more holistic understanding of the range of potential climate futures possible, which is essential when understanding risk and developing appropriate measures.

Defining the Baseline

15.42 The current baseline for the CCRA is based on historical climate data obtained from the Met Office recorded by the closest meteorological station to the Proposed Development (Cambridge Niab, 3.5 miles North of the Proposed Development). The baseline utilises the climate average data for the period of 1981-2010.

Impact Assessment Methodology

15.43 The following key terms and definitions relating to the CCRA have been used[25]:

- Climate hazard – The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources. Climate-related hazards include extreme weather and climate events;
- Climate change impact – The consequences of realised risks on natural and human systems, where risks result from the interactions of climate-related hazards (including extreme weather and climate events), exposure, and vulnerability. Impacts generally refer to effects on lives; livelihoods; health and well-being; ecosystems and species; economic, social and cultural assets; services and infrastructure. Impacts may be referred to as consequences or outcomes and can be adverse or beneficial;
- Likelihood – The chance of a specific outcome occurring, where this might be estimated probabilistically; and
- Consequence – any effect on the receptor or asset resulting from the climate hazard having an impact.

15.44 The CCRA is based on a stepped approach, as described within the following sections.

Step 1: Identify Climate Hazards

15.45 Climate parameters are based on IEMA Guidance and the United Kingdom Climate Projections 2018 (UKCP18) categories. The climatic parameters mentioned in those documents are extensive and only the relevant parameters to the Proposed Development were assessed.

15.46 Using the climate change data gathered climate hazards determined to be relevant to the Proposed Development have been identified.

15.47 Climate hazards to be considered in the CCRA during the demolition, construction and operation of the Proposed Development have been identified in Table 15.2.

Table 15.2 Climatic Parameters for the CCRA

Climate Parameter	Proposed to be Scoped In or Out	Rationale
Extreme Weather Events (storms, wildfires and drought)	In	The Proposed Development may be vulnerable to extreme weather events such as storm damage, wildfires and drought. The effects of extreme weather events will be considered qualitatively in the CCR Assessment.
Precipitation Change (flooding)	In	The Proposed Development may be vulnerable to changes in precipitation, for example, pressure on water supply during periods of reduced rainfall, and damage to structures and drainage systems during periods of heavy precipitation.
Temperature Change	In	Increased temperatures may increase cooling requirements, alter the power efficiency of the Proposed Development, and could impact on the structural integrity of buildings and materials.
Sea Level Rise	Out	The Proposed Development is not located in a coastal area and a topographic map has shown that the Proposed Development is elevated above 24m, so it was concluded that the Proposed Development is not susceptible to sea level rise. The IPCC Sea Level Projection Tool estimates a 0.84m increase relative to a 1995 – 2014 baseline at the closest region of Cromer for 2100 under RCP8.5.
Sea Temperature Rise	Out	The Proposed Development is not likely to be affected by the small increase in sea temperature during its operational life based on its topography and proximity to the coastal area.
Wind	In	From 1969 to 2022, the UK annual mean wind speed demonstrates a downward trend, consistent with that observed globally. However, the effects of increased wind strength will be considered qualitatively in the CCR Assessment as wind can be linked to extreme weather events such as storms.

Step 2: Identify Likelihood of Hazards Impacting the Proposed Development

15.48 Once the climate hazards are identified, the likelihood of the hazard impacting the Proposed Development are assessed using the criteria set out in Table 15.3 from the European Commission's Technical guidance on the climate proofing of infrastructure in the period 2021- 2027.

[25] *European Commission (2021), Technical guidance on the climate proofing of infrastructure in the period 2021- 2027. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021XC0916(03)&from=EN#:~:text=The%20guidance%20includes%20an%20updated,implementing%20climate%20change%20adaptation%20measures%20.*

Table 15.3 Likelihood Criteria

Likelihood Term	Qualitative	Quantitative (Probability of Occurrence)
Rare	Highly unlikely to occur	5%
Unlikely	Unlikely to occur	20%
Moderate	As likely to occur as not	50%
Likely	Likely to occur	80%
Almost certain	Very likely to occur	95%

Step 3: Identify Consequence of the Climate Impacts

15.49 Once likely climate impacts were identified, the consequence of these impacts on the Proposed Development were assessed using the criteria in Table 15.4.

Table 15.4 Consequence Criteria

Risk Areas	Magnitude Of Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
Asset damage, engineering, operational	Impact can be absorbed through normal activity	Adverse event that can be absorbed by taking business continuity actions	A serious event that requires additional emergency business continuity actions	A critical event that requires extraordinary / emergency business continuity action	Disaster with the potential to lead to shut down or collapse or loss of the asset / network
Health and safety	First aid case	Minor injury, medical treatment	Serious injury or lost work	Major or multiple injuries, permanent injury or disability.	Single or multiple fatalities
Environment	No impact on baseline environment. Localised in the source area. No recovery required.	Localised within site boundaries. Recovery measurable within one month of impact.	Moderate harm with possible wider effect. Recovery in one year.	Significant harm with local effect. Recovery longer than one year. Failure to comply with environmental regulations / consent	Significant harm with widespread effect. Recovery longer than one year. Limited prospect of full recovery
Social	No negative social impact	Localised, temporary social impacts	Localised, long-term social impacts	Failure to protect poor or vulnerable groups. National, long-term social impacts	Loss of social licence to operate. Community protests
Financial	% IRR < 2% of turnover	% IRR 2-10% of turnover	% IRR 10-25% of turnover	% IRR 25-50% of turnover	% IRR > 50% of turnover
Reputational	Localised, temporary impact on public opinion.	Localised, short-term impact on public opinion.	Local, long-term impact on public opinion with adverse local media coverage.	National, short-term impact on public opinion. Negative national media coverage.	National, long-term impact with potential to affect the stability of the government.
Cultural Heritage and cultural premises	Insignificant impact.	Short term impact. Possible recovery or repair.	Serious damage with wider impact to tourism industry.	Significant damage with national and international impact.	Permanent loss with resulting impact on society.

15.50 Adaptation measures were then subsequently identified to further reduce risk and increased resilience, after which a residual assessment of risk was performed.

Step 4: Identify CCRA Risk and Significance

15.51 This assessment is informed by the risk framework and the descriptors of likelihood and consequence adopted from the European Commission's Technical guidance on the climate proofing of infrastructure in the period 2021- 2027.

The likelihood and consequence descriptors and the risk matrix are provided in Table 15.3, Table 15.4 and Table 15.5.

Table 15.5 Risk Matrix as per the EU Technical Guidance (2021)

Liklihood	Magnitude of Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
Rare	Low (NS)	Low (NS)	Medium (NS)	High (S)	Extreme (S)
Unlikely	Low (NS)	Low (NS)	Medium (NS)	High (S)	Extreme (S)
Moderate	Low (NS)	Medium (NS)	High (S)	Extreme (S)	Extreme (S)
Likely	Medium (NS)	High (S)	High (S)	Extreme (S)	Extreme (S)
Almost certain	High (S)	High (S)	Extreme (S)	Extreme (S)	Extreme (S)
NS – Not significant; S – Significant					

15.52 The ES presents further adaptation measures to demonstrate how the Proposed Development will be adapted to increase its resilience to future climate conditions.

Assumptions and Limitations

15.53 The CCRA uses probabilistic projections as described in the Future Baseline section below. As such, there is a degree of uncertainty around the magnitude and timing of the climate predictions.

BASELINE CONDITIONS

Current Baseline

15.54 The current baseline for the CCRA is based on historical climate data obtained from the Met Office recorded by the closest meteorological station to the Proposed Development (Cambridge Niab, 3.5 miles North of the Proposed Development), as summarised in Table 15.6 below. The baseline utilises the climate average data for the period of 1981-2010.

Table 15.6 Historic Climate Data (1981-2010)

Climate Parameter	Baseline Data
Mean annual maximum daily temperature (°C)	14.47
Mean summer maximum daily temperature (°C)	21.79
Mean winter minimum daily temperature (°C)	1.59
Number of days of air frost per annum	42.77
Highest average temperature for baseline period (°C)	22.76 (July)
Lowest average temperature for baseline period (°C)	1.25 (February)
Mean annual rainfall (mm)	568.13
Mean summer rainfall (mm)	49.93
Mean winter rainfall (mm)	42.73
Wettest month on average (mm)	October

15.55 The following events are examples of extreme climatic conditions experienced at the site location in the past:

- Storm Henk (January 2024): widespread strong winds and heavy rainfall, particularly across the southern and central areas of England and Wales. Wind gusts reached over 58mph, and heavy rain led to significant flooding. Several amber and red flood warnings were issued across Cambridgeshire; and
- Heatwave (September 2023): The UK experienced seven consecutive days of daily maximum temperatures exceeding 30°C where a record of 32.5°C in Cambridge was recorded.

Future Baseline

15.56 For the purpose of the assessment, UKCP18 probabilistic projections for pre-defined 30-year periods for the following average climate variables have been obtained and analysed and can be found in Table 15.7 where it is compared against the baseline data:

- Mean annual temperature;
- Mean summer temperature;
- Mean winter temperature;
- Maximum summer temperature;
- Minimum winter temperature;
- Mean annual precipitation;
- Mean summer precipitation; and
- Mean winter precipitation.

15.57 UKCP18 probabilistic projections have been analysed for the 25km grid square in which the site is located. These figures are expressed as temperature/precipitation anomalies in relation to the 1981-2010 baseline.

15.58 UKCP18 uses a range of possible scenarios, classified as Representative Concentration Pathways (RCPs), to inform differing future emission trends. These RCPs *"… specify the concentrations of greenhouse gases that will result in total radiative forcing increasing by a target amount by 2100, relative to preindustrial levels."* RCP8.5 is considered to be the worst-case global scenario with the greatest concentration of GHGs in the atmosphere and has been used as the purposes of this assessment as a worst-case scenario.

15.59 Construction activities are anticipated to take approximately 10 years, beginning 2027. Construction will be phased, with the first occupation commencing in 2029 and completion date in 2037. For the purpose of the assessment, the construction period is 10 years (from 2027-2037), and operation period begins in 2033 for a 60-year period. Therefore, the CCRA has considered a scenario that reflects a high level of GHG emissions at the 10%, 50% and 90% probability levels up to the 2099 projection to assess the impact of climate change over as much of the lifetime of the Proposed Development as possible.

RECEPTOR AND RECEPTOR SENSITIVITY

15.60 In relation to CRRA, the assessment focusses on the Proposed Development. Relevant receptors include residents, users of the Proposed Development, and the buildings and infrastructure itself.

EMBEDDED MITIGATION

15.61 The following climate change measures have been proposed to be embedded during construction and operation of the Proposed Development:

- Both passive solutions (e.g., low g-value glazing, external shading, natural ventilation) and active measures (e.g., mechanical cooling, retrofit readiness) will need to be considered at the appropriate design stage, with the passive measures reviewed first. In practice, different approaches will be adopted, depending on the dwelling location and site constraints; and
- Further details on managing environmental risks during construction will be included within the Construction Environmental Management Plan (CEMP), to be completed closer to the start of construction.

15.62 More details of proposed mitigation measures will be made available during the later design stages as part of the Reserved Matters Applications.

Table 15.7 Baseline and projected climate data

Climate Variable	Baseline	Climate Change Projections (RCP8.5)			Trend	Source
		(2020-2049)	(2050-2079)	(2070 -2099)		
Temperature						
Mean annual maximum temperature (°C)	14.7	+1.08 (+0.49 to +1.69)	+2.48 (+1.35 to +3.65)	+3.74 (+2.19 to +5.37)	↑	*1*[26]
Mean summer maximum daily temperature (°C)	21.79	+1.39 (+0.46 to 2.26)	+3.22 (+1.53 to +4.94)	+4.91 (+2.52 to +7.38)	↑	*1*
Mean winter minimum daily temperature (°C)	1.59	+0.90 (+0.14 to +1.71)	+2.09 (+0.74 to +3.56)	+3.04 (+1.2 to +5.05)	↑	*1*
Highest temperature for baseline period (°C)	July 22.76	-	-	-	-	*1*
Lowest temperature for baseline period (°C)	February 1.25	-	-	-	-	*1*
Rainfall						
Mean annual rainfall (mm)	568.13	-0.1% (-6.03 to +5.77)	-2.9% (-12.49 to +6.49)	-2.3% (-13.44 to +8.71)	↓	*1*
Mean summer rainfall (mm)	49.93	-7.2% (-27.26 to +12.65)	-21.2% (-48.07 to +6.22)	-33.8% (-62.06 to +0.51)	↓	*1*
Mean winter rainfall (mm)	42.73	+5.04% (-3.81 to +14.90)	+12% (-3.43 to +29.63)	+19% (-1.24 to +43.08)	↑	*1*
Wettest month on average (mm)	October 59.04	-	-	-	-	*1*
Driest month on average (mm)	February 34.5	-	-	-	-	*1*
Other						
Sea Level rise (m)	-	0.29	0.58	0.8	↑	*2*[27]
Storm surges	-	The UKCP18 model suggest a small contribution from storm surges, however it is unclear if the frequency and severity of future storm surges is going to change.				*1*
Heatwaves	-	Under a high emissions scenario, it is estimated that by the end of the 21st Century, all areas of the UK are projected to be warmer with hotter, drier summers and heatwaves likely to become more common and intense.				*1*
Wildfires	-	Think Hazard[28] has classified the wildfire hazard in Cambridgeshire as high according to the information that is currently available to this tool. This means that there is greater than a 50% chance of encountering weather that could support a significant wildfire that is likely to result in both life and property loss in any given year.				*3*
Drought	-	The Met Office has projected a trend towards drier summers on average, with the trend being stronger under a high GHG emission scenario compared to a low one. However, it is the distribution of rainfall throughout the seasons that will determine UK drought risk.				*1*

Source :1 - Footnote 25; 2 – Footnote 26: 3 – Footnote 27;

[26] *UKCP18 Projections – Land Projections: probabilistic (25km). [Online] Available at: https://ukclimateprojections-ui.metoffice.gov.uk/products*
[27] *UKCP18 Projection – Marine Projections for Tide Gauge FelixstowePier near Cambridgeshire. [Online] Available at: https://ukclimateprojections-ui.metoffice.gov.uk/products*
[28] *Think Hazard. [Online] Available at: https://thinkhazard.org/en/report/40098-united-kingdom-england-cambridgeshire/WF*

POTENTIAL EFFECTS

Enabling, Demolition and Construction

15.63 During enabling, demolition and construction, receptors such as the construction work force, plant, vehicles, materials and the construction programme may be vulnerable to a range of climate risks. These could include:

- Inaccessible construction site due to severe weather event (flooding, snow and ice, storms) restricting working hours and delaying construction;
- Health and safety risks to workforce during severe weather events;
- Unsuitable conditions (e.g. due to very hot or wet weather) for certain construction activities; and
- Damage to construction materials, plan and equipment, including damage to temporary buildings/facilities within the site boundary, such as offices, compounds, material storage areas and worksites, as a result of weather events (e.g. extreme rainfall).

15.64 CCRA risks identified for the construction phase of the Proposed Development can be found in Table 15.8. Refer to the CCRA in **ES Volume 3, Appendix: Climate Change and Greenhouse Gases – Annex 1** for more information on the likelihood and magnitude of consequence for each risk.

Table 15.8 CCRA for Enabling, Demolition and Construction

Climate Variable	Risk Identified	Initial Risk Rating (RCP8.5)
Storm Events (Wind, Hail)	Storm events (high winds and hail) make work environments and the use of construction equipment and machinery unsafe for workers. Debris can blow onto the construction site which could result in safety hazards and/or damage to equipment. Areas of the construction site located at a height and those more exposed to winds will be particularly hazardous environments.	Low
Extreme Heat	Extreme heat events can cause unsuitable conditions for workers and building activity, delaying construction and damaging building equipment.	Low
	Increased frequency, duration and intensity of extreme heat events may cause an increase in dust and particulate generation during construction. This can increase water requirements for spaying, degrade construction materials and equipment, and threaten the health and safety of construction workers.	Low
Extreme Rainfall	Extreme rainfall resulting from storm events can restrict working hours and prevent access to construction sites, delaying the build process and damaging building equipment	Low
	Extreme rainfall causing damage to building foundations due to increased soil moisture	Medium
Flooding	Flooding can prevent site access and create unsafe working conditions, delaying construction	Low

Completed Development

15.65 Key climate change hazards that could impact the Proposed Development during operation include:

- Restricted access to site due to extreme weather conditions or flooding;
- Damage to structures as a result of heavy rainfall or high temperatures;
- Energy infrastructure failure due to extreme heat;
- Increased energy consumption due to extreme heat; and
- Damage to green infrastructure due to extreme heat or drought.

15.66 Table 15.9 presents the key climate change risks that may also affect the Proposed Development during operation, detailing the assessment of significance of effects using the likelihood, consequence and significance criteria.

Table 15.9 CCRA for Completed Proposed Development

Climate Variable	Risk Identified	Initial Risk Rating (RCP8.5)		
		(2020-2049)	(2050-2079)	(2070-2099)
Extreme Heat	Prolonged extreme heat event can have a negative impact on building inhabitants (health and safety) and an increase in energy use for air conditioning	Low	Low	Medium
	Heat damage, deformation, cracking and thermal expansion of pavement surfaces and walls.	Low	Low	Low
	Increasing mean temperature, and frequency and severity of extreme heat events resulting in energy infrastructure failure and impacting reliability of energy supply and overall costs.	Low	Low	Medium
Water Scarcity	Lack of water available to sustain vegetation	Low	Low	Medium
	Reduced water supply for building users.	Low	Low	Medium
Extreme Wind	Extreme wind events may cause damage to building structures and occupants	Low	Low	Low
Flooding	Increased winter rainfall resulting in an increased likelihood of fluvial flooding	Low	Low	Medium
Wildfires	Increased summer temperatures combined with reduced rainfall increases the susceptibility of the site to wildfires	Low	Low	Low
Extreme Rainfall	Extreme rainfall events leading to high volumes of water captured on roofs, resulting in damage to roof and drainage systems. This can result in internal flooding	Medium	Medium	High

MITIGATION, MONITORING AND RESIDUAL EFFECTS

15.67 A number of climate resilience measures have already been embedded within the construction and design of the Proposed Development. Refer to the attached copy of the CCRA in **ES Volume 3, Appendix: Climate Change and Greenhouse Gases – Annex 1**.

15.68 In consideration of the nature and scale of the Proposed Development, a proportional approach to determine climate resilience and adaptation has been undertaken.

15.69 Table 15.10 presents additional adaptation measures that are likely to be incorporated into the design of the Proposed Development at detailed design stage to reduce the risks posed by the identified climate risks. The residual risk rating is then presented should these adaptation measures, or similar, be implemented.

15.70 When addressing climate risk, it is vital that not only adaptation measures be implemented and integrated into the Proposed Development design, but also that monitoring measures are established so that contingency plans and measures can be in place in the lead up to expected extreme weather events. Given the uncertainty surrounding climate change and its unpredictability, it is important that weather forecasts and patterns be monitored during the construction stage, as doing so will avoid disruption and minimise potential damage to assets.

15.71 Table 15.10 shows the updated risk ratings after adaptation measures have been implemented. All risks have been rated as low, showing no risk is present after adaptation measures are taken into consideration.

Table 15.10 Adaptation/Resilience Measures Suggested to be Implemented as Part of the Proposed Development to Improve Resilience to Climate Change

Climate Variable	Risk Identified	Adaptation Measure	Residual Risk Rating (RCP8.5)		
			(2020-2049)	(2050-2079)	(2070-2099)
Enabling, Demolition and Construction					
Storm Events (Wind, Hail)	Storm events (high winds and hail) make work environments and the use of construction equipment and machinery unsafe for workers. Debris can blow onto the construction site which could result in safety hazards and/or damage to equipment. Areas of the construction site located at a height and those more exposed to winds will be particularly hazardous environments.	Consider developing register of vulnerable construction assets If applicable undertake regular monitoring of trees and vegetation in the area, pruning as necessary to avoid damage to the construction site or blocking access roads, in the event of a storm with high wind speed.	Low	-	-
Extreme Heat	Extreme heat events can cause unsuitable conditions for workers and building activity, delaying construction and damaging building equipment.	Cease outdoor and non-essential work if working conditions are too dangerous, and could result in injury to workers and damage to equipment Consider inspection of vulnerable construction assets after a hot day	Low	-	-
	Increased frequency, duration and intensity of extreme heat events may cause an increase in dust and particulate generation during construction. This can increase water requirements for spraying, degrade construction materials and equipment, and threaten the health and safety of construction workers.	None - Sufficient dust suppression measures have been set out in the NWC.14 Construction Environmental Management Plan ('CEMP').	Low	-	-
Extreme Rainfall	Extreme rainfall resulting from storm events can restrict working hours and prevent access to construction sites, delaying the build process and damaging building equipment	Cease outdoor and non-essential work if working conditions are too dangerous, and could result in injury to workers and damage to equipment	Low	-	-
	Extreme rainfall causing damage to building foundations due to increased soil moisture	Design the drainage system on a 1:100-year rainfall event. Additionally, consider adding stabilising agents to the soil to reduce its susceptibility to moisture changes.	Low	-	-
Flooding	Flooding can prevent site access and create unsafe working conditions, delaying construction	Ensure sufficient drainage in operation during construction phase	Low	-	-
Operation					
Extreme Heat	Prolonged extreme heat event can have a negative impact on building inhabitants and an increase in energy use for air conditioning if installed	Address risk at detailed design stage and incorporate passive measures such as overhangs from balconies and use of trees to provide shading of facades Additionally, as set out in the Sustainability Strategy, Overheating requirements will comply with Building Regulations Part O.	Low	Low	Low
	Heat damage, deformation, cracking and thermal expansion of pavement surfaces and walls.	None	Low	Low	Low
	Increasing mean temperature, and frequency and severity of extreme heat events resulting in energy infrastructure failure and impacting reliability of energy supply and overall costs.	National Grid's Climate Resilience Strategy will ensure the risk from extreme heat will be reduce as outlined in their strategy under 5.2.3.[29]	Low	Low	Low
Water Scarcity	Lack of water available to sustain vegetation	Landscaping to be drought resistant Water efficient irrigation i.e. drip irrigation and use of rainwater harvesting.	Low	Low	Low
	Reduced water supply for building users.	South Staff's Water (Incorporating Cambridge Water) Resilience Action Plan outlines measures to ensure a secure and reliable supply of water for the long term. This can be found in their Reliance Plan under 4.3 Operational Resilience.[30] Water efficient fittings and fixtures in dwellings and non-domestic buildings.	Low	Low	Low
Extreme Wind	Extreme wind events may cause damage to building structures and occupants	Undertake regular monitoring of trees and large bushes in the area, pruning as necessary to avoid damage to buildings in the event of a storm with high wind speeds.	Low	Low	Low
Flooding	Increased winter rainfall resulting in an increased likelihood of fluvial flooding	The proposed drainage strategy to be designed to accommodate a 40% increase in precipitation due to climate change, exceeding the likely projected changes in an extreme (RCP8.5) climate change scenario. Monitor extent to which flooding is occurring. If risk is recurring, when current drainage system reaches end of design life, consider incorporating more outlets, steeper gradients or increase eaves gutter catchment to increase flow capacity. Consider introducing a drainage maintenance/operation plan so that the drainage system is monitored and kept blockage free.	Low	Low	Low
Increased Summer Temperatures	Increased summer temperatures combined with reduced rainfall increases the susceptibility of the site to wildfires	None	Low	Low	Low
Extreme Rainfall	Extreme rainfall events leading to high volumes of water captured on roofs, resulting in damage to roof and drainage systems. This can result in internal flooding	The proposed drainage strategy to be designed to accommodate a 40% increase in precipitation due to climate change, exceeding the likely projected changes in an extreme (RCP8.5) climate change scenario.	Low	Low	Medium

[29] *National Grid, RIIO-T3 Climate Resilience Strategy (2024), [Online] Available at: https://www.riiot3.nationalgrid.com/sites/g/files/atxybb411/files/documents/2024-12/A02_NGET_Climate%20Resilience%20Strategy_Redacted.pdf*
[30] *South Staffs Water (incorporating Cambridge Water), Resilience Action Plan (2019), [Online] Available at: https://www.cambridge-water.co.uk/media/0ljozi5n/resilience-action-plan-200819.pdf*

Residual Effects

15.72 Following the implementation of the above suggested adaptation measures the risk profile has been reduced. There are now no high risks for the three time periods under RCP 8.5.

Table 15.11 Initial and Residual Risk Profiles for the Proposed Development

Risk Rating	RCP 8.5 (2020-2049)		RCP 8.5 (2050-2079)		RCP 8.5 (2070-2099)	
	Initial risk profile	Residual risk profile	Initial risk profile	Residual risk profile	Initial risk profile	Residual risk profile
Enabling, Demolition and Construction						
Low (NS)	5	6	-	-	-	-
Medium (NS)	1	0	-	-	-	-
High (S)	0	0	-	-	-	-
Extreme (S)	0	0	-	-	-	-
Completed Development						
Low (NS)	8	9	8	9	3	8
Medium (NS)	1	0	1	0	5	1
High (S)	0	0	0	0	1	0
Extreme (S)	0	0	0	0	0	0

15.73 Using the risk matrix in Table 15.5 which includes the significance criteria for climate change risk, the significance of climate change risk for the Proposed Development can be assessed.

15.74 Prior to the implementation of adaptation measures, the initial assessment identified 6 construction risks, of which were 5 were rated low and 1 was rated medium. Using the risk matrix in Table 15.5, these are classified as Not Significant.

15.75 Summarising the operational risks from 2070-2099 (being the worst-case scenario), 3 were rated as low risk, 5 medium risk and 1 high risk. According to the significance criteria in Table 15.5, the high risk associated with extreme rainfall is deemed 'Significant' for the Proposed Development.

15.76 However, taking into consideration the identified adaptation measures, the risk profile was reduced to contain only low and medium risks. Therefore, using the residual risk profile, it can be concluded that climate change risk is 'Not Significant' for the Proposed Development.

15.77 To ensure climate change risk remains 'Not Significant', the Applicant will implement and monitor the adaptation measures identified for the Proposed Development (particularly those associated with the high risk) to ensure they are implemented throughout design, construction and operation of the Proposed Development.

15.78 In summary, the CCRA presented in this ES chapter illustrates that climate change risk does not present a significant risk to the Proposed Development. That is, whilst a total of 15 risks were identified including 1 high initial risk associated with extreme rainfall, through the implementation of adaptation measures the risk profile was reduced to contain only low and medium risks. As aforementioned, the Applicant will implement and monitor the adaptation measures identified for the Proposed Development to ensure climate change risk remains 'Not Significant'.

ASSESSMENT OF THE FUTURE ENVIRONMENT

Cumulative Effects Assessment

15.79 The CCRA considers the impact of climate change on the Proposed Development itself. Therefore, a cumulative assessment is not applicable.

PART B: LIFE CYCLE GREENHOUSE GAS ASSESSMENT

ASSESSMENT METHODOLOGY

Basis of Assessment

15.80 A reasonable worst-case scenario has been undertaken as outlined in Table 15.13. This sets out the sources of data used for the GHG assessment.

15.81 The Applicant is seeking flexibility within the OPA on how the site is developed, with the application establishing parameters of the scale and nature of the Proposed Development. The OPA allows flexibility to deliver a range of residential and commercial space within the Proposed Development, with a set of maximum parameters in terms of Gross External Area (GEA) for each land use type. For the GHG assessment, the following assumptions have been made to ensure a reasonable worst-case assessment is provided, which are:

- GHGs from embedded carbon in construction materials are based on information from **ES Volume 1, Chapter 5: Enabling, Demolition and Construction** provided by the Applicant's Construction Advisor, which are based on the maximum amount of development which could come forward;
- GHGs from energy consumption during operation are based on the Illustrative Masterplan, as this provides the necessary level of detail against which to quantify the GHG emissions from these sources. The GHG emissions from energy consumption would not vary significantly to those from the maximum parameters, or any other of the potential development scenarios; and
- GHGs from transport during the Proposed Development's operation has been based on the maximum transport generating scenario (as set out in **ES Volume 1, Chapter 2: EIA Methodology**), as this generates the highest number of trips (by road and rail) to and from the Proposed Development and therefore the greatest GHG emissions.

Defining the Baseline

15.82 For the GHG assessment, the baseline is the 'business as usual' scenario where the Proposed Development is not implemented. The baseline typically consists of the GHG emissions from any existing site operations and existing carbon stock within the soil and the above- and below-ground vegetation within the site boundary.

15.83 The baseline emissions for the operations of the current greenfield site are considered to be zero for this assessment, due to the unavailability of data at the current time. This presents a worst-case-scenario for calculating GHG emissions as all emissions relating to the Proposed Development are considered as additional to current operations.

Evolution of the Baseline

15.84 The evolved baseline emissions are considered to be zero as outlined in the section above.

Impact Assessment Methodology

15.85 The study area adopted for the GHG impact assessment covers the direct GHG emissions (those arising from construction and operational activities undertaken within the respective Proposed Development boundary) and indirect GHG emissions (those associated with construction materials, the transportation of materials and waste, and worker transportation) for all phases of the Proposed Development.

15.86 The GHG assessment has adopted a project life cycle approach to calculate emissions. The output of this approach is used to identify emissions sources likely to generate the largest amount of GHG emissions and enable priority areas for mitigation to be identified. This approach is consistent with the principles set out in IEMA Guidance and PAS:2080.

15.87 In line with the WRI and WBCSD GHG Protocol guidelines the life cycle GHG impact assessment has been reported as tonnes of carbon dioxide equivalent (tCO_2e) and has considered the seven Kyoto Protocol gases:

- Carbon dioxide (CO_2);
- Methane (CH_4);
- Nitrous oxide (N_2O);
- Sulphur hexafluoride (SF_6);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Nitrogen Trifluoride (NF_3).

15.88 Expected GHG emissions arising from the construction, operation and demolition activities include but are not limited to embodied carbon in materials, transportation of materials and waste, waste disposal and operational emissions of the Proposed Development such as energy use and waste disposal. Emissions have been quantified using a calculation-based methodology as per the following equation and aligned with the GHG Protocol:

Activity data x GHG emissions factor = GHG emissions

15.89 A set of standard data quality principles have been applied so that the results from the GHG assessment are as accurate and representative as possible. This has included the selection of emission factors that are representative of the UK construction industry. GHG activity data has been gathered directly from the Proposed Development's engineering and design teams to enable consistency and completeness of data collection.

15.90 The Department for Energy Security and Net Zero (DESNZ) 2024 emissions factors and embodied carbon data from the Inventory of Carbon and Energy V4.0 (ICE) have been used as the source of emissions factors for calculating GHG emissions where the appropriate data was available. The resulting carbon footprint has been compared to the existing baseline condition, to identify the impact of the Proposed Development.

15.91 Where relevant GHG activity data was unavailable, assumptions and benchmarks have been developed. Any assumptions, inclusions and exclusions that inform the GHG emissions calculation have been clearly described in the sections below.

15.92 In order to assess the potential impacts of GHG emissions arising from the Proposed Development, likely activities and their associated GHG emissions sources have been estimated. Potential activities related to the Proposed Development that could cause GHG emission impacts are presented in Table 15.12.

Table 15.12 Potential Sources of GHG Emissions

Life Cycle Stage	Activity	Primary Emission Sources
Pre-construction (including demolition)	On-site pre-construction activity i.e. enabling works, demolition of existing structures, etc.	GHG emissions from fuel consumption by construction plant and vehicles, generators on-site, and worker commuting
	Transportation and disposal of earthworks/ waste	GHG emissions from transportation and disposal of earthworks/ pre-construction waste
	Land clearance	GHG emissions associated with the loss of carbon stock
Product manufacture	Raw material extraction and manufacturing of products/ materials	Embodied GHG emissions associated with product and material manufacture
	Transport of products/ materials to site	GHG emissions from fuel consumption of transportation of products and materials to site
Construction	On-site construction activity	Energy (electricity, fuel, etc.) consumption from plant and vehicles, generators on-site, and material consumption
	Transport of construction workers	Energy (electricity, fuel, etc.) consumption from worker commuting
	Transportation and disposal of earthworks/ waste	GHG emissions from transportation and disposal/treatment of earthworks/ construction waste
Operations	Operation of the Proposed Development	GHG emissions from energy use, additional traffic, provision of potable water, and treatment of wastewater
	Transportation and disposal of waste	GHG emissions from transportation and disposal of waste
	Building and grounds maintenance	GHG emissions associated with replacement materials/products
	Emissions displacement	Avoided or displaced emissions through use of any renewable energy systems or offsetting
	Landscaping	Changes in GHG emissions/sinks from landscaping and re-vegetation

Phasing

15.93 As stated previously, construction will be phased, with the first occupation commencing in 2029 and a completion date of 2037. Therefore, there will be a period of overlap where construction GHG emissions will coincide with partial operational GHG emissions.

15.94 This scenario has not been accounted for in the GHG assessment as it is not possible to quantify the GHG emissions associated with partial operation. In addition, it is expected that partial operation will not result in construction GHG emissions becoming significant and that full occupation represents the worst-case scenario.

Assumptions and Limitations

15.95 The GHG impact assessment is taking place before the detailed design is prepared, and construction has begun. Consequently, some data required for a detailed assessment of the GHG emissions for the construction and operation of the Proposed Development is not available.

15.96 The GHG assessment presented here is therefore a combination of data from industry benchmarks and the following documents forming part of this planning application:

- **ES Volume 1, Chapter 5: Enabling, Demolition and Construction**;
- Site Location Plan (Drawing Reference: EP1 10001 – P00);
- NWC.11 – Travel Plan; and
- NWC.13 – Refuse and Recycling Strategy: Operational Waste Management Strategy.

15.97 It is acknowledged that there is a cumulative impact of GHG emissions on the global climate however it is not possible to quantitively assess these effects. While the impact of any individual development may be limited, it is the cumulative impact of many schemes over time that has a significant impact on climate change. Whilst the emissions from the Proposed Development can be estimated and compared against regional and national carbon budgets, the combined effect together with all other GHG-emitting activities cannot be quantitatively assessed.

15.98 Key assumptions applied in the lifecycle GHG assessment are presented in Table 15.13. The lifecycle modules are labelled in accordance with PAS 2080:2023 guidelines (British Standards Institute (BSI), 2023). Key sources of assumptions include the Royal Institution of Chartered Surveyors (RICS) Whole Life Carbon Assessment for the Built Environment, 2nd edition guidelines (Royal Institution of Chartered Surveyors (RICS), 2023) and National Grid's internal carbon factor and conversion factor database.

Table 15.13 Key Assumptions Applied in Lifecycle GHG Impact

Lifecycle Module	Emission Source		Key Assumptions
A: Before Use Stage	A0 Preconstruction Stage		Estimated land use categories and areas were based on the BNG assessment for change of land use spreadsheet.
	A1-3 Product Stage		Estimated material quantities for concrete, reinforcement, blockwork, drylining, timber, structural steel, roof and ceiling finishes, etc, were obtained from the design team. Emission factors were obtained from the Bath University Inventory of Carbon and Energy (ICE). Material quantities were uplifted by respective wastage rates for each material type, based on wastage rate assumptions from the Royal Institution of Chartered Surveyors (RICS) Whole Life Carbon Assessment for the Built Environment.
	A4-5 Construction Process Stage	A4 Material transport	Distances of material transport to the construction site from the point of production, and mode of transport, have been assumed based on the RICS guidance. Emission factors from the Department for Energy Security and Net Zero (DESNZ) have been used (Rigid HGV, Average Laden and Cargo Ship, Average Size). All cables and electrical equipment are assumed to be transported from Europe.
		A5.1 Pre- demolition	Material wastage rates and end-of-life scenarios were assumed based on RICS guidance
		A5.2 Construction activities	Construction activities are anticipated to take approximately 10 years, beginning 2027. Construction will be phased, with the first occupation commencing in 2029 and completion date in 2037. For the purpose of the assessment, the construction period is 10 years (from 2027-2037), and operation period begins in 2033 for a 60-year period. Construction activities emissions were calculated using gross internal area benchmark based on construction activities in the UK. GHG emissions associated with land use were estimated based on hectares of habitat type lost and gained due to the Proposed Development. Land use emission factors were obtained from the EU Commission guidelines for the calculation of land carbon stocks.
		A5.3 Waste	Material wastage rates and end-of-life scenarios have been based on RICS guidance.
		A5.4 Worker transport	Emissions from transportation of workers to the work site (i.e., commuting) have been calculated based on an estimate commute distance of 30km each way (60km per day). Unless otherwise indicated, it has been assumed workers commute via car with an occupancy rate of 1 per vehicle. The number of construction workers have been obtained from the project construction advisor.
B: Use Stage	B2-5 Maintenance, Repair and Replacement		Emissions from maintenance and repair activities have been assumed in line the RICS guidance.
	B2-5 Waste		The GHG emissions from the waste generated during the Proposed Development's operational phase have been considered as part of the GHG assessment. The waste assessment has been based on the following assumptions from Thalia Waste Management who provide services for Cambridgeshire and Cambridge City Council and the information provided in the Waste Management Plan by KMC: • Conversion factors to convert from litres to kgs was used based on the information outlined in the EPA - National Waste Statistics: Guidance for estimating quantity of waste generated on-site.[31] • Over half the residual waste was assumed to be composted[32], as such the residual waste was divided by 2 and half the waste was assumed to be recycled or composted and other half was assumed to end up in landfill. Emissions factors have been applied accordingly. • 100% of the food wasted is assumed to be composted and 100% of the recycling[33] is assumed to be recycled and emissions factors have been applied accordingly.
	B2-5 Material Transport & Commuting		Resident commute is based on the number of trips for car, bus and rail data provided by the Travel Consultant (KMC). The car trips were then split by the % vehicle share provided by Tag Data Book[34] until 2050 and the % vehicle splits assumed to be the same as 2050 for the rest of the design period. Department for Energy Security and Net Zero (DESNZ) emissions factor for "*Business travel – land"* and "*WTT – pass vehs & travel – land"* have been used to calculate the operational transport emissions. Given the above, the total operational transport emissions are a conservative worst-case scenario, as the % of electric vehicles and public transport will likely increase and the grid intensity factor of electric vehicle use will further reduce in line with UK policy on reducing transport emissions[35]. Material transport is assumed to be covered under B2-5 Maintenance and repair.
	B6 -B7 Operational energy and water use		Operational energy has been calculated based on the AECOM team modelling (to a level appropriate to the Outline Planning Application), which details 36,285,000kWh of annual energy use. Emission factors from the Treasury Green Book Future UK Grid Carbon Intensity Projections[36] were applied over the operational period for the Proposed Development from 2033 to 2093, including emissions from energy generation, Transmission and Distribution loss, Generation Well to Tank emissions and Transmission and Distribution Well to Tank emissions. Operational water use and water treatment have been calculated based on 8,950 people and uses 80 litres of water per person per day, with 90% of the supply being treated after use. These figures are based on the Sustainability Strategy for water use and the Socio-Economics assessment for the worst-case maximum population for the Proposed Development.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

15.99 The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained. All GHG emissions have the potential to result in a cumulative effect in the atmosphere.

15.100 The sensitivity of the receptor (global climate) to increases in GHG emissions is always defined as high as any additional GHG impacts could compromise the UK's ability to reduce its GHG emissions and therefore meet its future 5-year carbon budgets. Also, the extreme importance of limiting global warming to below 2°C this century is broadly asserted by the International Paris Agreement (UNFCCC, 2015) and the climate science community.

[31] *EPA - National Waste Statistics: Guidance for estimating quantity of waste generated on-site [Online] Available at: https://www.epa.ie/publications/monitoring--assessment/waste/national-waste-statistics/Reporting-on-waste-generated-by-on-site-activities.pdf*
[32] *Thalia Waste Management – Cambridgeshire [Online] Available at: https://thalia.co.uk/where-we-work/cambridgeshire/?redirectedFrom=rule08-waterbeachwastemanagementpark*
[33] *Cambridge City Council - What happens to your recycling and rubbish [Online] Available at: https://www.cambridge.gov.uk/what-happens-to-your-recycling-and-rubbish*
[34] *Government Uk – TAG Data Book [Online] Available at: https://www.gov.uk/government/publications/tag-data-book*
[35] *Department of Transport – Decarbonising Transport [Online] Available at: https://assets.publishing.service.gov.uk/media/610d63ffe90e0706d92fa282/decarbonising-transport-a-better-greener-britain.pdf*
[36] *DESNZ (2023) Treasury Green Book Future UK Grid Carbon Intensity Projections. Available at: https://assets.publishing.service.gov.uk/media/6567994fcc1ec5000d8eef17/data-tables-1-19.xlsx*

Magnitude of Impact and Categorising Likely Significant Effects

15.101 The significance of effect of GHG emissions on the climate has been determined in line with the criteria set out in IEMA Guidance (Institute of Environmental Management and Assessment (IEMA), 2022).

15.102 As per IEMA guidance, any GHG emissions or reductions from a project might be considered to be significant, as all emissions contribute to climate change. The rationale for classification is as follows:

- Any additional GHG impacts could compromise the UK's ability to reduce its GHGs and therefore the ability to meet its carbon budgets;
- The extreme importance of limiting global warming to below 2°C this century, as broadly asserted within the Paris Agreement, national legislation, and community support. Additionally, the 2018 Special Report by the IPCC (IPCC, 2018) highlighted the importance of limiting global warming below 1.5°C; and
- A disruption to global climate is already having diverse and wide-ranging impacts to the environment, society, economic and natural resources. Known effects of climate change include increased frequency and duration of extreme weather events, temperature changes, rainfall and flooding, and sea level rise and ocean acidification. These effects are largely accepted to be negative, profound, global, likely, long-term to permanent, and are transboundary and cumulative from many global actions.

15.103 IEMA guidance states that it is challenging to identify fixed numerical thresholds against which to identify the significance of a project regarding the net change in GHG emissions. Therefore, the GHG assessment should present context for the GHG emissions, and it is down to the practitioner's professional judgement on how best to contextualise a project's GHG impact.

15.104 The guidance continues to explain that *"the crux of significance therefore is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050."*

15.105 Table 15.14 presents the different significance levels as per the latest version of IEMA guidance. The guidance emphasises that "*a project that follows a 'business-as-usual' or 'do minimum' approach and is not compatible with the UK's net zero trajectory or accepted aligned practice or area-based transition targets, results in a significant adverse effect. It is down to the practitioner to differentiate between the 'level' of significant adverse effects e.g.* ***'moderate'*** *or* ***'major'*** *adverse effects."*

15.106 Moderate and Major adverse impacts and beneficial impacts are considered to be significant, while all other significance levels are deemed to be not significant.

Table 15.14 Significance Levels as per IEMA Guidance

Level of Significance	Levels of Effect	Assessment Criteria
Significant	Major Adverse	The Proposed Development's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make meaningful contribution to the UK's trajectory towards net zero.
	Moderate Adverse	The Proposed Development's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero.
Not Significant	Minor Adverse	The Proposed Development's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.
	Negligible	The Proposed Development's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions.
Significant	Beneficial	The Proposed Development's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.

15.107 In GHG accounting, it is considered good practice to contextualise emissions against pre-determined carbon budgets. The UK has a defined national carbon budget and budgets set by devolved administrations, which have been determined as being compatible with net zero and international climate commitments. Progress against these budgets is reviewed annually, and future budgets are set 10 years in advance.

15.108 To assess the impact of GHG emissions from the Proposed Development, the UK carbon budgets have been used as a proxy for the climate. The UK carbon budgets are in place to restrict the amount of GHG emissions the UK can legally emit in a five-year period. The UK is currently in the 4th carbon budget period, which runs from 2023 to 2027. The 4th and 5th Carbon Budgets reflect the previous 80% reduction target by 2050. The 6th carbon budget aligns with the legislated 2050 net zero commitment.

15.109 In order to illustrate the Proposed Development's trajectory towards net-zero by 2050, it is recommended that the Climate Change Committee's (CCC) balanced net zero pathway is utilised post-2037, in the absence of any nationally legally binding Carbon Budgets after using the subsequent 6th Carbon Budget.

15.110 The CCC balanced net-zero pathway is recommended to be divided into 5-year periods post-2037 to match the previous 1st - 6th legally binding UK National Carbon Budgets. The proposed Carbon Budget periods derived from the net-zero pathway encompass the 7th, 8th and 9th indicative budget periods up to 2050 in line with the UK's 1.5°C trajectory as detailed in Table 15.15.

15.111 However, it should be explicitly noted that the supplementary Carbon Budgets beyond 2037 have not been formally adopted by the government nor ratified by parliament and can only be used as an indicative measure to contextualise the Proposed Development's progress toward the national net-zero trajectory.

15.112 The 7th Carbon budget has been estimated by the CCC[37], however, has not been legally ratified. The 8th and 9th carbon budgets have been extracted from the supporting data published by the CCC.

15.113 It is noted that the contribution of most individual projects to national-level budgets will be small and so the UK context will have limited value. This GHG emissions assessment therefore uses the IEMA guidance to assess the significance of effects, with the UK carbon budgets being used to provide context to the predicted GHG emissions.

Table 15.15 UK Carbon Budgets

Carbon Budget	UK Carbon Budget ($MtCO_2e$)	Indicative Carbon Budgets based upon the CCC's balanced net-zero pathway ($MtCO_2e$)
4th (2023-2027)	1,950	
5th (2028-2032)	1,725	
6th (2033-2037)	965	
7th (2038-2042)		535
8th (2043-2047)		220
9th (2048-2050)		22

[37] *Climate Change Committee (CCC), The Seventh Carbon Budget (2025). [Online] Available at: https://www.theccc.org.uk/publication/the-seventh-carbon-budget/*

BASELINE CONDITIONS

15.114 The baseline for the GHG assessment represents a 'business as usual' scenario where the Proposed Development does not go ahead.

15.115 The baseline for this GHG assessment has not included the GHG emissions associated with the existing greenfield site (i.e. operational emissions) as it was not feasible to source data on the current operations of the site of the Proposed Development. Therefore, by treating the baseline as zero emissions, a worst-case assessment has been conducted, which acts as a precautionary approach.

15.116 The study area adopted for the GHG impact assessment covers the direct GHG emissions (those arising from construction and operational activities undertaken within the Proposed Development boundary) and indirect GHG emissions (those associated with the production of construction materials, the transportation of materials and waste to and from site, and worker transportation to and from the site).

EMBEDDED MITIGATION

15.117 This section identifies any mitigation and/or best practice measures that form an integral part of the Proposed Development and therefore evaluated as part of the assessment of effects.

15.118 The following GHG mitigation measures, as outlined in the *North West Cambridge Masterplan Future Phases Framework Site-Wide Travel Plan* have been proposed to be incorporated during the operation of the Proposed Development:

- The Transport Strategy for the Proposed Development is underpinned by 'the principle of 'triple access planning', which refers to ensuring three forms of access and connectivity, which are summarised as follows:
  - Physical Mobility – Traditional transport (walking, wheeling, cycling, public transport).
  - Spatial Proximity – How close essential / day-to-day services and destinations are to where people live.
  - Digital Connectivity – Access to services and opportunities through digital forms.
- In support of the above Transport Strategy, a range of 'softer' Travel Plan Measures are proposed, and can be found in *Table 4.2 Proposed Travel Plan Measures* of the abovementioned Travel Plan. These measures are focused around encouraging walking, cycling, using public transport, incentives to use an electric vehicle and restricted parking to reduce ownership of vehicles, which would aid with reducing the travel carbon footprint.

15.119 The following GHG mitigation measures, as outlined in the *North West Cambridge Masterplan Energy Statement* have been proposed to be incorporated during the operation of the Proposed Development:

- A fabric first approach has been adopted to reduce energy demand with fabric specification deemed by the project team to be equivalent to Passivhaus Principles.
- The resulting area weighted Dwelling Fabric Energy Efficiency (DFEE) is less than the Target Fabric Energy Efficiency (TFEE) Part L 2021 target by 26%.
- The building services will include energy efficient lights, optimised heat distribution and mechanical ventilation with heat recovery.
- The domestic units are currently showing a CO_2 emission saving of 37% from energy demand reduction.
- The preferred energy strategy utilises individual air source heat pumps (ASHPs) for dwellings and a local heating network supplied by building-mounted ASHPs for apartments.
- On-site renewable energy generation will be maximised by utilising the available flat roof space for apartments and non-domestic buildings and suitably oriented pitched roofs on houses for solar photovoltaic (PV) panels.

POTENTIAL EFFECTS

Enabling, Demolition and Construction

15.120 Construction activities are anticipated to take approximately 10 years, and will include the development of up to 3,800 dwellings, up to 1,800 student accommodation units, up to 1,800 co-living units, up to 6,500m^2 of senior living, up to 60,000m^2 of academic floorspace, 40,000m^2 of employment floorspace, 3,500m^2 Use Class E (a – f), demolition, structure and envelope works, landscaping and communal facilities.

15.121 In order to assess the magnitude of the impact of the Proposed Development on the climate, GHG emissions associated with the enabling, demolition and construction of the Proposed Development have been calculated based on the methodologies discussed previously.

15.122 As detailed in Table 15.16, the total GHG emissions estimated to be emitted from the 10-year enabling works and construction period associated with the Proposed Development have been calculated to be approximately 340,705 tCO_2e. Average annual emissions are therefore expected to be approximately 34,070.5 tCO_2e.

15.123 All these emissions are considered 'additional' and are included in the impact assessment of the Proposed Development. They are defined as additional as they are considered new and would not occur if the Proposed Development did not go ahead.

Table 15.16 Enabling Works and Construction Estimated GHG Emissions

Project Activity/ Emission Source	GHG Emissions (tCO_2e)	GHG Emissions as a Proportion of Emissions Generated Throughout the Construction
A0 Preconstruction stage	5,022	1%
A1-3 Raw materials supply and manufacture	223,360	66%
A4 Material transport	37,286	11%
A5.1 Pre-construction demolition	19,237	6%
A5.2 Construction activities	22,172	7%
A5.3 Waste	3,094	1%
A5.4 Worker transport	30,533	9%
Total GHG emissions over construction period (tCO_2e)	**340,705**	-
Average annualised GHG emissions during construction (tCO_2e)	**34,070.50**	-

Significance of GHG Emissions During Enabling, Demolition and Construction

15.124 IEMA Guidance outlines that all GHG emissions contribute to climate change. To contextualise their level of significance, these emissions have been compared to corresponding UK carbon budget in Table 15.17.

15.125 The estimated annual GHG emissions from the construction period of the Proposed Development (34,070.5 tCO_2e), is compared to the percentage contribution of the annual budget within each carbon budget period.

15.126 The Proposed Development is anticipated to require a ten-year construction period. For this assessment it is assumed construction will commence in 2027. This would mean that construction of the Proposed Development would fall within the 4th, 5th and 6th UK carbon budget periods and equates to 0.0017%, 0.0099% and 0.0141% of the budgets, respectively.

15.127 GHG Emissions from construction of the Proposed Development will not contribute more than 0.01% to the total carbon UK budget.

15.128 GHG emissions from the total construction period of the Proposed Development includes the total lifecycle emissions.

Table 15.17 Contribution of the Enabling Works and Construction GHG Emissions to the UK Carbon Budgets

Carbon Budget	UK Carbon Budget ($MtCO_2e$)	Potential Project Emissions (tCO_2e)	Percentage Contribution of Construction Emissions to the UK Budget
4th (2023-2027)	1,950,000,000	34,070.50	0.0017%
5th (2028-2032)	1,725,000,000	170,352	0.0099%
6th (2033-2037)	965,000,000	136,281.99	0.0141%

15.129 Based on Table 15.17 it is assessed that the effect from construction GHG emissions arising from the Proposed Development is Minor Adverse and therefore not significant in relation to the UK's net zero target.

Completed Development

15.130 As detailed in Table 15.18 the total GHGs estimated to be emitted during the operational phase of the Proposed Development have been calculated to be approximately 785,576 tCO_2e over the course of the 60-year operational life of the Proposed Development. Average annual GHG emissions are therefore expected to be approximately 13,093 tCO_2e.

15.131 The majority (86%) of operational emissions come from commuter transport road journeys. As noted in Table 15.13 it is likely this is an overestimate as the share of low-carbon journeys will likely increase, as well as the carbon intensity of electric vehicle journeys decarbonising as the grid decarbonises. Beyond the mitigation aspects identified in paragraph 15.123, the majority of transport decarbonisation will be controlled through regional and national policy[35].

Table 15.18 Operational Estimated GHG Emissions

Project Activity/ Emission Source	GHG Emissions (tCO_2e)	GHG Emissions as a Proportion of Emissions Generated from the Completed Development
B2-5 Maintenance, Repair and Replacement	6,870.56	1%
B2-5 Waste	77,308.28	10%
B2-5 Material Transport	Material transport is assumed to be covered under B2-5 Maintenance and repair.	-
B2-5 Commuter Transport	673,932.51	86%
B6 -B7 Operational energy and water use	27,465	3%
Total GHG emissions over operational period (tCO_2e)	**785,576**	-
Average Annualised GHG emissions during operation (tCO_2e)	**13,093**	-

Significance of GHG Emissions once the Proposed Development is Complete and Occupied

15.132 All GHG emissions are expected to contribute to climate change. To contextualise the magnitude of these emissions they have been compared to corresponding UK carbon budgets in Table 15.19. Therefore, the estimated annual GHG emissions from the complete and occupied Proposed Development (13,093 tCO_2e) have been compared to the percentage contribution of the annual budget within each carbon budget.

15.133 In terms of the UK carbon budgets, the complete and occupied phase goes beyond the current published UK carbon budgets. Therefore, projected future carbon budgets in line with the CCC's balanced pathway up to 2050 have been provided for comparison up to 2050, which are <0.2273%.

Table 15.19 Contribution of the Operational GHG Emissions to the Legislated and Projected UK Carbon Budgets

Carbon Budget	UK Carbon Budget ($MtCO_2e$)	Potential Project Emissions (tCO_2e)	Percentage Contribution of Operational Emissions to the UK Budget
6th (2033-2037)	965,000,000	65,464.70	0.0068%
7th (2038-2042)	535,000,000	65,464.70	0.0122%
8th (2043-2047)	220,000,000	65,464.70	0.0298%
9th (2048-2050)	22,000,000	39,278.82	0.1785%

15.134 The IEMA Guidance should be used when assessing the significance of GHG emissions from the Proposed Development. As noted previously, it is down to the practitioner's professional judgement on how best to contextualise a project's GHG impact.

15.135 Based on the significance criteria provided in Table 15.14, it is assessed that the effect of operational GHG emissions is Minor Adverse (not significant). This implies that the project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type.

15.136 A project with Minor Adverse effects is fully in line with the measures necessary to achieve the UK's trajectory towards net zero. It should be noted that the reported GHG emissions from energy usage has already accounted for the grid decarbonisation. As the majority of operational GHG emissions are likely to reduce over time in line with the UK Government plans to continue its progressive grid decarbonisation and transport decarbonisation. Planned national reductions in fossil-fuel based power stations, paired with increases in low carbon and renewable energy will progressively reduce the emissions intensity of electricity generation.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

15.137 The Proposed Development will have a Minor Adverse effect on the global climate as a result of the enabling works and construction, and the complete and occupied phases of the Proposed Development.

15.138 The following GHG mitigation measures could be considered for incorporation during the construction of the Proposed Development to further reduce the GHG impact:

- Where practical, building materials could be sourced locally to reduce transportation pollution and support the local economy;
- Where possible, low-carbon materials and/or recycled materials could be used in replacement of virgin materials. Specifically, all cement used in construction could have up to 40% fly ash, Ground Granulated Blast-furnace Slag (GGBS) or recycled binders incorporated into the concrete mixture;
- Low carbon reinforcement could be integrated into the design;
- The design could consider higher levels of recycled content of aluminium in the glass façade and windows;
- All reinforcement steel could be sourced from the UK ensuring it has high recycled content;
- Higher strength concrete cladding could be considered to reduce thickness; and
- Blockworks with high recycled or cement replacement could be considered.

Residual Effects

15.139 There will be unavoidable GHG emissions resulting from both the enabling works and construction phase and once the Proposed Development is complete and occupied, as materials, energy and fuel use, and transport would be required, and these cannot be eliminated through design changes or the implementation of other mitigation measures.

15.140 The significance of effects has been assessed as Minor Adverse (not significant), therefore it is expected that the residual effect during both phases will also be Minor Adverse (not significant) following implementation of the mitigation and standard management measures.

15.141 In summary, the GHG impacts discussed in this chapter show that the Proposed Development will not significantly impact the UK's ability to achieve their carbon reduction targets. The proposed mitigation measures to reduce GHG impacts during construction and operation align with government policy on reducing GHG emissions, demonstrating that the Proposed Development is fully compatible with existing and emerging policy requirements.

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

15.142 The evolved baseline emissions are considered to be zero as outlined in the Defining the Baseline section.

Cumulative Effects Assessment

15.143 The current IEMA guidance states that:

"All global cumulative GHG sources are relevant to the effect on climate change, and this should be taken into account in defining the receptor (the atmospheric concentration of GHGs) as being of 'high' sensitivity to further emissions."

"Effects of GHG emissions from specific cumulative projects therefore should not be individually assessed, as there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other."

15.144 In essence, there is no difference in the impact on the global climate of a tonne of carbon dioxide equivalent emitted at one location compared to the same mass of CO_2e (CO_2 equivalents) emitted anywhere else on the planet. So, it is not meaningful to carry out a cumulative assessment of the Proposed Development alongside other developments in a geographical area, nor is such an exercise reasonably practicable due to the difficulties in accessing reliable future emissions data for other developments.

15.145 As such, the assessment against the carbon budgets, which considers all the UK's emissions in reaching a budget, is an appropriate approach to considering cumulative impacts. Such an approach is supported by recent Court of Appeal case law (Boswell v Secretary of State for Transport, case reference EWCA Civ 145) and the recent Development Consent Order (DCO) decisions for the Net Zero Teesside and Drax Bioenergy Carbon Capture and Storage projects.

Chapter 16: Effects Interactions

TRIUM

INTRODUCTION

16.1 This chapter of the Environmental Statement (ES) summarises the likelihood for in-combination effects or 'effect interactions'. Effect interactions occur because of interactions between multiple individual effects associated with just one project on a receptor, i.e. the combination of individual effects, for example, effects in relation to noise, dust and traffic on a receptor. Effects arising from the Proposed Development in combination with other developments or 'cumulative schemes' have been discussed separately throughout this ES (in **ES Volume 1, Chapters 6 to 15 and ES Volume 2**), as appropriate, and have not been re-iterated within this ES chapter to avoid repetition.

16.2 There is no established EIA methodology for assessing the nature and scale of effect interactions on a receptor. However, the European Commission[1] (EC) has produced guidelines to assist EIA practitioners in developing an approach which is appropriate to a project. These guidelines have been used to develop an approach which uses the defined residual effects of the Proposed Development (as presented throughout this ES (in **ES Volume 1, Chapters 6 to 15** and **ES Volume 2**) to determine the potential for effect interactions. These residual effects are reliant on mitigation measures (as identified throughout this ES and presented in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule**; the mitigation measures have been assumed to be secured / implemented through the discharge of relevant planning conditions or Section 106 Obligations.

16.3 The approach to defining effect interactions involves tabulating the residual effects of the Proposed Development against receptors or, where more appropriate, receptor groups to identify the potential for in-combination effects or effect interactions. For the purposes of this assessment, residual effects that have been identified in **ES Volume 1, Chapters 6 to 15** that **do not affect a common sensitive receptor have not been presented in this ES chapter, as no effect interactions are anticipated.** Only residual effects that are likely to give rise to effect interactions have been considered and discussed as relevant.

16.4 Residual effects that are beneficial, neutral or adverse in nature and that are minor, moderate or major in scale have been considered. Within the tables presented throughout this chapter, adverse effects are shaded in '**orange**', beneficial effects are shaded in '**green**' and neutral effects are shaded in '**blue**' for ease of identification.

16.5 Based on the definitions of what negligible effects comprise for each of the technical assessments as presented in this ES, these do not warrant further consideration in relation to in-combination effects and have therefore not been pulled through into the assessment of effect interactions. Only effects described as minor and above in scale are therefore considered.

16.6 The potential for in-combination effects is identified, and professional judgement is then used to determine if the potential in-combination effects could lead to an effect interaction. Where a resultant effect interaction is identified, this is further discussed qualitatively.

16.7 The scale of an effect interaction is not assigned as part of this assessment; however, whether the effect interaction is a likely significant effect has been identified[2]. For example, when one or more residual significant effects (i.e. effects that are typically Moderate or Major in scale) from different EIA topics (i.e. air quality, noise and vibration) coincide on a receptor, the effect interaction is deemed 'significant'. If none of the individual effects are significant, consideration is given as to whether the combination of 'not significant' effects could result in a combined significant effect, based on professional opinion.

16.8 Where the nature of effects that interact are the same (i.e. they are all either adverse or beneficial), the nature of the effect interaction is reported upon. Where multiple effects of differing natures interact (i.e. there is a combination of both beneficial and adverse effects), the nature of any significant effect interaction identified has not been assigned.

16.9 This ES chapter has been divided into two parts:

- Enabling, Demolition and Construction – Table 16.1 addresses the potential for effect interactions to relevant receptors/receptor groups arising from the enabling, demolition and construction works; and
- Completed Development – Table 16.2 addresses the potential for effect interactions to relevant receptors/receptor groups arising from the completed and operational Proposed Development.

ENABLING, DEMOLITION AND CONSTRUCTION

16.10 Table 16.1 presents the in-combination effects assessment throughout the enabling, demolition and construction works and identifies the potential for effect interactions. Where the potential for an effect interaction is identified, this is discussed in more detail below.

Table 16.1 Effects at Common Receptors – Enabling, Demolition and Construction

Receptor Type	Technical Topic Area and Residual Effect	Scale and Nature of Residual Effect	Significance
Conduit Head Road and 1-8 Bradrushe Fields	**Noise** Construction Noise Activity (Timeslice 4)	Minor Adverse	Not Significant
	Noise Construction Traffic Noise (2027)	Minor Adverse	Not Significant
	Vibration Construction Vibration	Moderate Adverse	**Significant**
Lots S1 and S2 (Phase 1)	**Noise** Construction Noise Activity (Timeslice 1)	Minor Adverse	Not Significant
	Noise Construction Traffic Noise (2027)	Moderate Adverse	**Significant**
	Vibration Construction Vibration	Moderate Adverse	**Significant**
Lots 2 and 3 (Phase 1)	**Noise** Construction Noise Activity (Timeslice 1)	Minor Adverse	Not Significant
	Noise Construction Traffic Noise (2027)	Minor Adverse	Not Significant
	Vibration Construction Vibration	Minor Adverse	Not Significant
Lot S3 (Phase 1)	**Noise** Construction Traffic Noise (2027)	Minor Adverse	Not Significant
	Noise Construction Traffic Noise (2033)	Minor Adverse	Not Significant
	Vibration Construction Vibration	Moderate Adverse	**Significant**
Madingley Rise	**Noise** Construction Noise Activity (Timeslice 4)	Minor Adverse	Not Significant

[1] *European Community (1999); Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.*
[2] *The methodology for determining a significant in-combination effect has been defined by the HS2 Phase 2a: West Midlands – Crewe Scoping and Methodology Report (July 2017) and the published HS2 Phase 2a Environmental Statement Volume 1 Introduction and Methodology and Volume 2 Community Area Reports (July 2017). Noting this relates to an infrastructure project, the general principles are relevant here and as such, the methodology for assigning significance to in combination effects has been included in this ES to assess if there are any combination effects that would result in a significant effect.*

Receptor Type	Technical Topic Area and Residual Effect	Scale and Nature of Residual Effect	Significance
	Vibration Construction Vibration	Minor Adverse	Not Significant
Non-Motorised Users (Pedestrians and Cyclists)	**Traffic and Movement** Severance	Minor Adverse	Not Significant
	Traffic and Movement Delay	Minor Adverse	Not Significant
	Traffic and Movement Amenity	Minor Adverse	Not Significant
	Traffic and Movement Fear and Intimidation	Minor Adverse	Not Significant
	Traffic and Movement Road User and Pedestrian Safety	Minor Adverse	Not Significant
Car Drivers	**Traffic and Movement** Driver Delay	Minor Adverse	Not Significant
	Traffic and Movement Road User and Pedestrian Safety	Minor Adverse	Not Significant
Residents of Huntingdon Road Properties (141, 143 - 145, 136, 138, 162, 171, 173 and 183)	**Vibration** Construction Vibration	Minor Adverse	Not Significant
	Visual Presence of cranes during construction (Viewpoint 29 and 33)	Moderate Adverse	**Significant**
	Noise Construction Noise Activity (All Timeslices)	Minor Adverse	Not Significant

Conduit Head Road and 1-8 Bradrushe Fields

16.11 During the enabling demolition and construction phase, residential properties along Conduit Head Road and 1-8 Bradrushe Fields will experience effects in relation to construction vibration (Moderate Adverse), construction traffic noise during 2027 (Minor Adverse) and noise from construction activities during Q4 2031 (Minor Adverse).

16.12 It should be noted that the construction noise traffic and noise from construction activities do not have the potential to interact, given that they relate to different time periods (2027 and Q4 2031 respectively). While construction vibration will interact with construction traffic noise during 2027 and construction vibration will interact with construction activities during Q4 2031, these could be considered as separate effect interactions.

16.13 These effect interactions will be experienced in the short term and would be temporary in nature as it is associated with the construction works, and noise and vibration effects would only be experienced during specific construction activities, which would not be undertaken on a continuous basis for the duration of the works.

16.14 Given the construction vibration effect is significant in isolation, these effect interactions are considered to be **Significant Adverse**.

Lots S1 and S2 (Phase 1)

16.15 During the enabling, demolition and construction phase residential properties at Lots S1 and S2, within Phase 1 of the 2013 OPP, have been identified as having the potential to experience in-combination effects in relation to noise and vibration effects.

16.16 Lots S1 and S2 will experience effects in relation to construction noise activities during Q2 2027 (Minor Adverse), construction traffic noise during 2027 (Moderate Adverse) and construction vibration (Moderate Adverse). The effects from both noise and vibration are considered to be worst case effects, given the worst case assumptions made about closeness to the sensitive receptors made within the ES chapter. Although the exact position of works will not be known until the RMA stage, it is unlikely that works would take place at the proximities assumed when defining the effect.

16.17 Furthermore, this effect interaction will be experienced in the short term and would be temporary in nature as it is associated with the construction works, and noise and vibration effects would only be experienced during specific construction activities, which would not be undertaken on a continuous basis for the duration of the works. The individual effects will be managed through site-specific management plans and strategies, which would be secured through the Construction Environmental Management Plan (CEMP) and include management and mitigation measures relating to noise and vibration. These measures have also been summarised in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule**.

16.18 Given the construction traffic noise effect and construction vibration effect are both significant in isolation, this effect interaction is considered to be **Significant Adverse**.

Lots 2 and 3 (Phase 1)

16.19 During the enabling, demolition and construction phase residential properties at Lots 2 and 3, within Phase 1 of the 2013 OPP, have been identified as having the potential to experience in-combination effects in relation to noise and vibration effects.

16.20 Lots 2 and 3 will experience effects in relation to construction noise activities during Q2 2027 (Minor Adverse), construction traffic noise during 2027 (Minor Adverse) and construction vibration (Minor Adverse). The effects from both noise and vibration are considered to be worst case effects, given the worst case assumptions made about closeness to the sensitive receptors made within the ES chapter. Although the exact position of works will not be known until the RMA stage, it is unlikely that works would take place at the proximities assumed when defining the effect.

16.21 Furthermore, this effect interaction will be experienced in the short term and would be temporary in nature as it is associated with the construction works, and noise and vibration effects would only be experienced during specific construction activities, which would not be undertaken on a continuous basis for the duration of the works. The individual effects will be managed through site-specific management plans and strategies, which would be secured through the Construction Environmental Management Plan (CEMP) and include management and mitigation measures relating to noise and vibration. These measures have also been summarised in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule**.

16.22 Given the scale and nature of the effects in isolation and the fact that each of these effects will not be continuous throughout the demolition and construction programme, this effect interaction is deemed **Not Significant Adverse**.

Lot S3 (Phase 1)

16.23 Residential properties at Lot S3, within Phase 1 of the 2013 OPP, have been identified as having the potential to experience in-combination effects in relation to noise and vibration effects. Lot S3 will experience effects in relation to construction noise during 2027 (Minor Adverse), construction traffic noise during 2033 (Minor

Adverse) and construction vibration (Moderate Adverse). The effects from both noise and vibration are considered to be worst case effects, given the worst case assumptions made about closeness to the sensitive receptors made within the ES chapter. Although the exact position of works will not be known until the RMA stage, it is unlikely that works would take place at the proximities assumed when defining the effect.

16.24 It should be noted that the construction traffic noise occurs during 2027 and 2033 do not have the potential to interact, given that they relate to different time periods. While construction vibration will interact with the construction traffic noise during 2027 and construction vibration will interact with construction traffic noise during, 2033 these could be considered as separate effect interactions.

16.25 Furthermore, this effect interaction will be experienced in the short term and would be temporary in nature as it is associated with the construction works, and noise and vibration effects would only be experienced during specific construction activities, which would not be undertaken on a continuous basis for the duration of the works. The individual effects will be managed through site-specific management plans and strategies, which would be secured through the Construction Environmental Management Plan (CEMP) and include management and mitigation measures relating to noise and vibration. These measures have also been summarised in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule**.

16.26 Given construction vibration effect is significant in isolation, this effect interaction is considered to be **Significant Adverse**.

Madingley Rise

16.27 During the enabling, demolition and construction phase the residential properties at Madingley Rise have been identified as having the potential to experience in-combination effects in relation to noise and vibration effects.

16.28 Madingley Rise will experience effects in relation to construction vibration (Minor Adverse) and construction noise activity during Q1 2033 (Minor Adverse). The effects from both noise and vibration are considered to be worst case effects, given the worst case assumptions made about closeness to the sensitive receptors made within the ES chapter. Although the exact position of works will not be known until the RMA stage, it is unlikely that works would take place at the proximities assumed when defining the effect.

16.29 The individual effects will be managed through site-specific management plans and strategies, which would be secured through the Construction Environmental Management Plan (CEMP) and include management and mitigation measures relating to noise and vibration. These measures have also been summarised in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule**.

16.30 Given the scale and nature of the effects in isolation and the fact that each of these effects will not be continuous throughout the demolition and construction programme and that each individual effects are not considered significant, this effect interaction is deemed **Not Significant Adverse**.

Non-Motorised Users (Pedestrians and Cyclists)

16.31 Non-motorised users (pedestrians and cyclists) utilising the proposed Cartwright Avenue (North), Cartwright Avenue (East) during the future year 2027 (early construction), and utilising Garrod Street and Cartwright Avenue (North) in the interim year of 2033 (construction and part operation) have the potential to experience in combination effects in relation to traffic and movement. During demolition and construction, non-motorised users will experience effects on severance (Minor Adverse), delay (Minor Adverse), amenity (Minor Adverse), fear and intimidation (Minor Adverse) and road user and pedestrian safety (Minor Adverse).

16.32 Due to the scale and nature of the effects in isolation, this effect interaction of traffic and movement effects is deemed **Not Significant Adverse**.

Car Drivers

16.33 Car drivers utilising the proposed Cartwright Avenue (North), Cartwright Avenue (East) during the future year 2027 have the potential to experience in combination effects in relation to traffic and movement. During demolition and construction, car drivers will experience effects on delay (Minor Adverse) and road user and pedestrian safety (Minor Adverse).

16.34 Due to the scale and nature of the effects in isolation, this effect interaction of traffic and movement effects is deemed **Not Significant Adverse**.

Residents of Huntingdon Road Properties (141, 143 -145, 136, 138, 162, 171, 173 and 183)

16.35 During the enabling, demolition and construction phase residents of properties along Huntingdon Road (141, 143 -145, 136, 138, 162, 171, 173 and 183), have been identified as having the potential to experience in-combination effects in relation to noise, vibration and visual effects. Visual effects occur at viewpoint 29 and 33.

16.36 Residents of Huntingdon Road Properties will experience effects in relation to construction vibration and construction noise (Minor Adverse) and visual (Moderate Adverse) effects due to presence of cranes during construction. The effects from both noise and vibration are considered to be worst case effects, given the worst case assumptions made about closeness to the sensitive receptors made within the ES chapter. Although the exact position of works will not be known until the RMA stage, it is unlikely that works would take place at the proximities assumed when defining the effect. The assessment of visual effects is considered to be a worst case assessment due to the maximum envelope being assessed as well as winter photography being used.

16.37 Given visual effect is significant in isolation, this effect interaction is considered to be **Significant Adverse**. Although it is important to note that these effects will be temporary.

COMPLETED DEVELOPMENT

16.38 Table 16.2 presents the in-combination effects assessment associated with the completed and operational Proposed Development and identifies the potential for effect interactions. Where the potential for an effect interaction is identified, this is discussed in more detail below.

Table 16.2 Effects at Common Receptors – Completed Development

Receptor Type	Technical Topic Area and Residual Effect	Scale and Nature of Residual Effect	Significance
Non-Motorised Users (Pedestrians and Cyclists)	**Traffic and Movement** Severance	Minor Adverse	Not Significant
	Traffic and Movement Delay	Minor Adverse	Not Significant
	Traffic and Movement Amenity	Minor Adverse	Not Significant
	Traffic and Movement Fear and Intimidation	Minor Adverse	Not Significant
Local Economy and Labour Market	**Socio-Economics** Provision of non-residential floorspace likely to accommodate 1,520 jobs based on a worst case scenario, provision of academic floorspace and key worker housing	Moderate Beneficial	**Significant**

Receptor Type	Technical Topic Area and Residual Effect	Scale and Nature of Residual Effect	Significance
	Socio-Economics Additional spending by new residents, employees and spending	Moderate Beneficial (IIA, OIA) / Minor Beneficial (CSC)	**Significant** to Not Significant
Local Infrastructure and its Users Including New Residents of the Proposed Development	**Socio-Economics** Demand for Primary Education	Minor Adverse	Not Significant
	Socio-Economics Demand for Primary Healthcare Facilities	Minor Adverse	Not Significant

Non-Motorised Users (Pedestrians and Cyclists)

16.39 Once the Proposed Development is complete and operational non-motorised users (pedestrians and cyclists) utilising the following road links will experience severance (Minor Adverse), delay (Minor Adverse), amenity (Minor Adverse) and fear and intimidation (Minor Adverse):

- Turing Way (North);
- Garrod Street;
- Eddington Avenue (South of Garrod Street);
- Turing Way (North of Site Access);
- Cartwright Avenue – North; and
- Cartwright Avenue – East.

16.40 Due to the scale and nature of the effects in isolation, this effect interaction is considered to be **Not Significant Adverse.**

Local Economy and Labour Market

16.41 Once the Proposed Development is complete and operational, the local economy and labour market has the potential to experience in combination effects in relation to socio-economics. The local economy and labour market will see a Moderate Beneficial effect from additional spending by residents and employees at the local scale, and the provision of floorspace likely to accommodate 1,520 FTE jobs resulting in a Moderate Beneficial effect.

16.42 As the beneficial effects are considered to be significant, the effect interaction of socio-economic effects on the local economy and labour market is deemed **Significant Beneficial**.

Local Infrastructure and its Users Including New Residents of the Proposed Development

16.43 Once the Proposed Development is complete and operational, local infrastructure and its users have the potential to experience in combination effects in relation to socio-economics. Local infrastructure and its users will experience effects on demand for primary education (Minor Adverse) and demand for primary health care facilities (Minor Adverse).

16.44 Due to the scale and nature of the effects in isolation, this effect interaction is considered to be **Not Significant Adverse.**

SUMMARY

16.45 In summary, the following significant effect interactions have been identified from the Proposed Development during demolition and construction:

- A **Significant** Adverse effect interaction (short-term) to Lots S1 and S2 due to combined noise and vibration effects;
- A **Significant** Adverse effect interaction (short-term) to Conduit Head Road and 1-8 Bradrushe Fields due to combined noise and vibration effects;
- A **Significant** Adverse effect interaction (short-term) to Lots S3 due to combined noise and vibration effects; and
- A **Significant** Adverse effect interaction (short-term) to Residents of Huntingdon Road Properties (141, 143 -145, 136, 138, 162, 171, 173 and 183) due to combined noise, vibration and visual effects.

16.46 The following significant effect interaction has been identified once the Proposed Development is complete and operational:

- A **Significant** Beneficial effect interaction on the local economy and labour market due to combined socio-economic effects.

Chapter 17: Likely Significant Effects

TRIUM

INTRODUCTION

17.1 This ES chapter presents a summary of the likely significant environmental and socio-economic effects pertaining to the Proposed Development, during the enabling, demolition and construction works, and once the Proposed Development is complete and operational.

17.2 The purpose of this ES chapter is not to re-present all of the residual effects associated with each of the technical topic assessments. All residual effects, including their associated nature and scale, are presented and summarised as relevant within each technical chapter of the ES, and reference should be made to **ES Volume 1, Chapters: 6 to 15**. Instead, this ES chapter focuses on summarising the likely significant effects that are expected to arise as a result of the Proposed Development, in line with the Environmental Impact Assessment (EIA) Regulations[1].

17.3 For the majority of technical topics, residual effects that are identified as 'Moderate' or 'Major' in scale are considered to be 'significant', with effects that are 'Negligible' or 'Minor' in scale being 'not significant'.

17.4 Departures from the above approach include the following, with further details provided within the respective ES chapters:

- **ES Volume 1, Chapter 11: Ecology and Biodiversity**, where all effects adverse and beneficial (Minor, Moderate and Major) are considered significant; and
- **ES Volume 2: Landscape and Visual Impact Assessment**, where Major, Major – Moderate and Moderate effects are considered to be 'significant', with Moderate – Minor effects considered 'not significant'.

17.5 Table 17.1 and Table 17.2 of this ES chapter respectively outline the likely significant residual effects resulting from the enabling, demolition and construction works associated with the Proposed Development, and once the Proposed Development is complete and operational. Significant adverse effects are shaded in '**orange**', significant beneficial effects are shaded in '**green**' and significant neutral effects are shaded in '**blue**' for ease of identification. Following which, the likely significant cumulative effects and effect interactions are summarised.

ENABLING, DEMOLITION AND CONSTRUCTION

17.6 Table 17.1 summarises the likely significant residual effects arising as a result of the Proposed Development during enabling, demolition and construction.

17.7 No significant residual enabling, demolition and construction effects are likely to arise as a result of the Proposed Development in respect to the following environmental topic areas which have been the subject of this EIA:

- Socio-Economics;
- Traffic and Movement;
- Air Quality;
- Built Heritage;
- Ground Conditions and Land Contamination;
- Water Resources, Flood Risk and Drainage;
- Climate Change and Greenhouse Gases.

17.8 Significant enabling, demolition and construction effects have been identified as being likely in respect of the following topic areas, and are therefore discussed further:

- Noise and Vibration;
- Ecology and Biodiversity;
- Landscape and Visual; and
- Land Take and Soils (Agriculture).

17.9 Table 17.1 summarises the likely significant enabling, demolition and construction effects associated with these topic areas.

Table 17.1 Likely Significant Effects – Enabling, Demolition and Construction

EIA Topic Area	Receptor(s)	Description of Residual Effect	Classification of Residual Effect			
			Scale and Nature (Geographic Extent)	D I	P T	St Mt Lt
Noise	Lot 5 (Phase 1)	Construction noise activity (Timeslice 1)	Major Adverse (Local)	D	T	Mt
	Lot M2 (Phase 1)	Construction noise activity (Timeslice 1)	Moderate Adverse (Local)	D	T	Mt
	Lots S1 and S2 (Phase 1)	Construction traffic noise (2027)	Moderate Adverse (Local)	D	T	Mt
Vibration	Lots S1 and S2 (Phase 1), Lot M2 (Phase 1), Lots S3 (Phase 1), Conduit Head Road and 1-8 Bradrushe Fields	Construction vibration	Moderate Adverse (Local)	D	T	Mt
Land Take and Soils (Agriculture)	BMV Agricultural Land	Permanent loss of 34.4ha of Grade 2 and Subgrade 3a to built development	Moderate to Major Adverse (Local)	D	P	Lt
Ecology and Biodiversity	Hedgerow	Minor fragmentation of one hedgerow. Short-term reduction in hedgerow habitat until new planting matures (20-30 years)	Minor Adverse reducing to Negligible (Not Significant) (Local)	D	T	St
	Skylark	Loss of breeding habitat for 9 pairs	Minor Adverse (Local)	D	P	Lt
	Barn Owl	Loss of a nest site	Minor Adverse (Local)	D	P	Lt
	Linnet	Loss of breeding habitat for up to 9 pairs	Minor Adverse (Local)	D	P	Lt
	Brown Long-Eared Bat	Loss of roost	Minor Adverse (Local)	D	P	Lt
	Brown Hare	Loss of population from the site	Minor Adverse (Local)	D	P	Lt
	Water Vole	Temporary reduction in the amount of habitat available in the short-term (2-3 years)	Minor Adverse reducing to Negligible (Not Significant) (Local)	D	T	St

[1] *His Majesty's Stationery Office (HMSO) 2017. The Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (as amended in 2018 and 2020).*

EIA Topic Area	Receptor(s)	Description of Residual Effect	Classification of Residual Effect			
			Scale and Nature (Geographic Extent)	D I	P T	St Mt Lt
Visual	Viewpoint 1: Cambridge Road, American Cemetery	Presence of cranes disrupting the skyline and the replacement of green fields (select views) in the background with construction compounds, which would create a distracting visual clutter	Major Adverse (Local)	D	T	St
	Viewpoint 7: Red Meadow Hill			D	T	St
	Viewpoint 9: PRoW 99/5 – West			D	T	St
	Viewpoint 35: Storey's Way Cycle Path			D	T	St
	Viewpoint 2: Madingley Road / A1303	Presence of cranes disrupting the skyline and the replacement of green fields (select views) in the background with construction compounds, which would create a distracting visual clutter	Major – Moderate Adverse (Local)	D	T	St
	Viewpoint 3: PRoW 154/3			D	T	St
	Viewpoint 8a: M11 – North			D	T	St
	Viewpoint 10: PRoW 99/5 – East			D	T	St
	Viewpoint 14: The Ridgeway – South			D	T	St
	Viewpoint 15: The Ridgeway – North			D	T	St
	Viewpoint 16: Pheasant Drive			D	T	St
	Viewpoint 17: Brook Leys			D	T	St
	Viewpoint 4: Madingley Road, Bridge Over the M11	Presence of cranes disrupting the skyline and the replacement of green fields (select views) in the background with construction compounds, which would create a distracting visual clutter	Moderate Adverse (Local)	D	T	St
	Viewpoint 29: Rear of Existing Huntingdon Road Properties			D	T	St
	Viewpoint 30: Kinetic View along the M11,			D	T	St
	Viewpoint 31: Huntingdon Road Bridge Crossing Over A14,			D	T	St
	Viewpoint 32: Huntingdon Road – Public Footpath Crossing			D	T	St
	Viewpoint 33: Huntingdon Road by Existing Houses			D	T	St
Landscape	Townscape Character Area: Early 21st Century Mixed-Use Development	During construction, the impact on the receptor will be considerable due to the introduction of machinery, material stockpiles and other construction facilities, which will create a cluttered and noisy area.	Major – Moderate Adverse (Local)	D	T	St
	The Site		Moderate Adverse (Local)	D	T	St
	The Skyline of Cambridge		Moderate Adverse (Local)	D	T	St
	Network of Ditches		Moderate Adverse (Local)	D	T	St
	Tranquillity		Major – Moderate Adverse (Local)	D	T	St

Notes:
Nature = Beneficial / Adverse / Neutral
Scale = Negligible / Minor / Moderate / Major
Geographic Extent = Site or Local / District or Borough / Regional / National / International
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term

Noise

17.10 The Proposed Development will result in **Significant Adverse** effects with respect to construction noise on residential properties within Lot 5 and Lot M2. These effects will be temporary for the duration of the enabling, demolition and construction works, occurring during Timeslice 1 (Q2 2027) of the construction programme. The receptors Lot 5 and Lot M2 are Phase 1 residential plots under construction due to be completed prior to works commencing on the Proposed Development, so have been considered as existing receptors.

17.11 It should be noted that these effects during Timeslice 1 are due to the multiple construction sites being built close to the receptors in addition to the road construction of Cartwright Avenue. While all these works could take place at the same time, it would likely only occur for specific times, or concurrently for a short period.

17.12 The Proposed Development will also result in a **Significant Adverse** effect with respect to construction traffic noise on residential properties on Lots S1 and S2. This effect will be temporary, at the beginning of the construction programme (2027). This effect is related to the changes in the land profiling between the M11 and the receptor, i.e. removal of the Phase 1 soil heaps which are currently on-site. The effect due to construction traffic is minimal compared to the reduction in screening that is currently provided to small parts of Lots S1 and S2.

17.13 **ES Volume 1, Chapter 9: Noise and Vibration** has identified a number of mitigation measures to address activities, summarised in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule.**

Vibration

17.14 The Proposed Development will result in **Significant Adverse** effects in relation to construction vibration to the following receptors:

- Lots S1 and S2;
- Lot M2;
- Lot S3;
- Conduit Head Road; and
- 1-8 Bradrushe Fields.

17.15 Adverse effects are only likely to occur if piling activities are taking place in proximity to sensitive receptors (i.e. assuming the worst case, less than 20m distance). In reality, high vibration generating activities are unlikely to occur so close to sensitive receptors as detailed planning methodology (i.e., Piling Method Statement) and solutions can seek to further reduce the potential for adverse impacts, and if they do, they would be of short-term duration and appropriately monitored.

17.16 These effects will be temporary for the duration of the enabling, demolition and construction works. **ES Volume 1, Chapter 9: Noise and Vibration** has identified a number of mitigation measures, summarised in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule.**

Land Take and Soils (Agriculture)

17.17 The Proposed Development will result in **Significant Adverse** effect to Best and Most Versatile (BMV) Agricultural Land during enabling, demolition and construction. These effects will be permanent following the enabling, demolition and construction works, due to the permanent loss of 34.4ha of Grade 2 and Subgrade 3a to built development.

Ecology and Biodiversity

17.18 The Proposed Development will result in **Significant Adverse** effects to the following receptors:

- Hedgerow;
- Skylark;
- Barn Owl;
- Linnet;
- Brown Long-Eared Bat;
- Brown Hare; and
- Water Vole.

17.19 Four existing hedgerows will be lost as a result of the Proposed Development, and one hedgerow will be minorly fragmented. The effects on the hedgerows will be temporary and identified as a short term reduction in hedgerow habitat. Therefore, the effect will reduce to Negligible (not significant) in the long term, with the planting of additional hedgerow habitat as part of the proposed landscaping.

17.20 The water voles will need to be relocated from four temporary construction site ponds. There will be a temporary reduction in the amount of habitat available to water voles in the short-term (2-3 years) which is assessed as being a **Significant Adverse** effect. In the long-term the new habitat provided within the Proposed Development will mitigate for the loss and the effect will reduce to Negligible (not significant).

17.21 The effects on Skylark, Barn Owl, Linnet, Brown Long-Eared Bat and Brown Hare will be permanent following the enabling, demolition and construction works, due to the potential permanent loss of supporting habitats, nests and roosts and a reduction in breeding populations. Various measures to compensate for these effects have either been delivered during Phase 1 or are to be delivered as part of the Proposed Development. These have been outlined in **ES Volume 1, Chapter 11: Ecology and Biodiversity** and summarised in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule.**

Landscape and Visual

17.22 The Proposed Development will result in **Significant Adverse** construction visual effects on the viewpoints defined in Table 17.1. Visual effects are due to the presence of cranes disrupting the skyline and the replacement of currently green fields in the background with construction compounds, which would create a distracting visual clutter.

17.23 The Proposed Development will result in **Significant Adverse** construction effects on the following landscape character areas / landscape components, as a result of the introduction of machinery, material stockpiles and other construction facilities, which will create a more cluttered and noisy area:

- Townscape Character Area (TCA) – Early 21st Century Mixed-Use Development;
- The Site;
- The Skyline of Cambridge,
- Network of Ditches; and
- Tranquility.

17.24 However, implementation of the CEMP measures to control lighting and noise disturbance, and maintain aesthetically appropriate site's hoardings will partially mitigate these landscape and visual effects. These have been summarised in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule.** It is also noted that these effects will be temporary in nature as limited to the construction work period.

COMPLETED DEVELOPMENT

17.25 Table 17.2 summarises the likely significant effects arising as a result of the Proposed Development, once complete and operational.

17.26 No significant effects have been identified as being likely as a result of the complete and operational Proposed Development in respect of the following environmental topic areas which have been the subject of this EIA:

- Traffic and Movement;
- Air Quality;
- Noise and Vibration;
- Built Heritage;
- Land Take and Soils (Agriculture);
- Ground Conditions and Land Contamination;
- Water Resources, Flood Risk and Drainage; and
- Climate Change and Greenhouse Gases.

17.27 Significant completed and operational Proposed Development effects have been identified as being likely in respect of the following topic areas:

- Socio-Economics;
- Ecology and Biodiversity; and
- Landscape and Visual.

Table 17.2 Likely Significant Effects – Completed and Operational Proposed Development

EIA Topic Area	Receptor(s)	Description of Residual Effect	Classification of Residual Effect			
			Scale and Nature (Geographic Extent)	D I	P T	St Mt Lt
Socio-Economics	Local economy and labour market	Provision of non-residential floorspace likely to accommodate 1,520 jobs based on a worst case scenario, provision of academic floorspace and key worker housing	Moderate Beneficial (Local)	D	P	Lt

EIA Topic Area	Receptor(s)	Description of Residual Effect	Classification of Residual Effect			
			Scale and Nature (Geographic Extent)	D I	P T	St Mt Lt
		Additional spending by new residents, employees and spending	Moderate Beneficial (Inner Impact Area, Outer Impact Area) (Local)	I	P	Lt
	Housing Need	Delivery of new open market, key worker, elderly and student housing	Moderate Beneficial (Borough)	D	P	Lt
Ecology and Biodiversity	Woodlands	Woodland enhancement measures	Minor Beneficial (Local)	D	P	Lt
	Washpit Brook	Watercourse enhancement measures	Minor Beneficial (Local)	D	P	Lt
	Hedgerows	Increase in hedgerow habitat	Minor Beneficial (Local)	D	P	Lt
Visual	Viewpoint 1: Cambridge Road, American Cemetery	Adverse visual effect as a result of Proposed Development	**Year 1**: Major – Moderate Adverse **Year 15**: Moderate Adverse (Local)	D	P	Lt
	Viewpoint 2: Madingley Road / A1303		**Year 1**: Major – Moderate Adverse	D	T	Lt
	Viewpoint 3: PRoW 154/3	Adverse visual effect as a result of Proposed Development	**Year 1**: Major - Moderate Adverse (Local)	D	T	Lt
		Beneficial visual effect as a result of Proposed Development	**Year 15**: Moderate Beneficial (Local)	D	P	Lt
	Viewpoint 7: Red Meadow Hill	Adverse visual effect as a result of Proposed Development	**Year 1**: Major - Moderate Adverse	D	T	Lt
	Viewpoint 9: PRoW 99/5 – West		Year 1: Moderate Adverse (Local)	D	P	Lt
	Viewpoint 10: PRoW 99/5 – East		**Year 1**: Major – Moderate Adverse **Year 15**: Moderate Adverse (Local)	D	P	Lt
	Viewpoint 14: The Ridgeway – South		**Year 1**: Major – Moderate Adverse **Year 15**: Moderate Adverse (Local)	D	P	Lt
	Viewpoint 15: The Ridgeway – North		**Year 1**: Major – Moderate Adverse **Year 15**: Moderate Adverse (Local)	D	P	Lt
	Viewpoint 16: Pheasant Drive		**Year 1**: Moderate Adverse **Year 15**: Moderate Adverse (Local)	D	P	Lt
	Viewpoint 17: Brook Leys	Neutral visual effect as a result of the Proposed development	**Year 1:** Moderate Neutral (Local)	D	P	Lt
		Beneficial visual effect as a result of Proposed Development	**Year 15:** Moderate Beneficial (Local)	D	P	Lt
	Viewpoint 29: Rear of Existing Huntingdon Road Properties	Adverse visual effect as a result of Proposed Development	**Year 1**: Moderate Adverse (Local)	D	T	Lt
	Viewpoint 30: Kinetic View along the M11		**Year 1**: Moderate Adverse (Local)	D	T	Lt
	Viewpoint 31: Huntingdon Road Bridge Crossing Over A14		**Year 1**: Major - Moderate Adverse	D	T	Lt
	Viewpoint 32: Huntingdon Road- Public Footpath Crossing		**Year 1**: Moderate Adverse (Local)	D	P	Lt
	Viewpoint 33: Huntingdon Road by Existing Houses		**Year 1**: Moderate Adverse	D	T	Lt
	Viewpoint 35: Storey's Way Cycle Path		**Year 1**: Major Adverse **Year 15**: Moderate Adverse (Local)	D	P	Lt
Landscape	Townscape Character Area: Early 21st Century Mixed-Use Development	Beneficial landscape effects as a result of Proposed Development	**Year 1**: Major – Moderate Beneficial **Year 15**: Major – Moderate Beneficial (Local)	D	P	Lt

Notes:
Nature = Beneficial / Adverse
Scale = Negligible / Minor / Moderate / Major
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D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term

Socio-Economics

17.28 The Proposed Development's effect on the local economy and labour market is considered to be a **Significant Beneficial** effect at the Local level. The Proposed Development is estimated to accommodate 1,520 net full time equivalent (FTE) jobs within the realistic worst case scenario. The additional spending by new residents and employees is considered to have an indirect impact at the Local level within the Inner Impact Area and the Outer Impact Area identified within **ES Volume 1, Chapter 6: Socio-Economics**.

17.29 The Proposed Development's effect on housing need is also considered to be a **Significant Beneficial** effect at the Borough Level through the provision of new open market, key worker, elderly and student housing.

Ecology and Biodiversity

17.30 The Proposed Development will result in **Significant Beneficial** effects to the following receptors:

- Woodlands;
- Washpit Brook; and
- Hedgerow.

17.31 These effects will be permanent and beneficial following the completion of the Proposed Development due to the commitment to meeting Biodiversity Net Gain (BNG) targets through enhancements. The details of the ecological enhancements are described in the Ecological Enhancement Plan submitted alongside the planning application and summarised in **ES Volume 1, Chapter 18: Environmental Management, Mitigation and Monitoring Schedule.**

Landscape and Visual

17.32 The Proposed Development will result in **Significant** operational visual effects on the viewpoints defined in Table 17.2.

17.33 At Viewpoints 2, 3, 7, 9, 29, 30, 31, 32 and 33 the introduction of built form will alter the skyline and reduce perceived rural openness, therefore resulting in **Significant Adverse** visual effects in Year 1. However, as the proposed landscaping matures and planting becomes established, the Proposed Development will become increasingly integrated into the surrounding environment. Therefore, the effects at Viewpoints 2, 7, 9, 29, 30, 31, 32 and 33 would be reduced to **Not Significant Adverse** by Year 15. The Proposed Development will result in **Significant Beneficial** operational visual effects on Viewpoint 3 during Year 15.

17.34 At Viewpoint 17, the Proposed Development will result in a **Significant Neutral** effect at Year 1 and a **Significant Beneficia**l effect at Year 15.

17.35 At Viewpoints 1, 10, 14, 15, 16 and 35, residual visibility of built form, localised enclosure, and loss of long-distance views or wooded skyline will result in **Significant Adverse** visual effects in Year 1 and Year 15, even after full implementation of design and landscape mitigation. These effects are localised and largely limited to areas immediately adjoining the site or along key visual corridors.

17.36 As a result of the delivery of mature landscaping and high quality design, public realm improvements and enhanced townscape coherence, the Proposed Development will result in a **Significant Beneficial** operational landscape effect on the TCA Early 21st Century Mixed-Used Development.

LIKELY SIGNIFICANT CUMULATIVE EFFECTS

17.37 The EIA process has identified likely significant cumulative effects additional to the main assessment of the Proposed Development, summarised in Table 17.1 and Table 17.2, as a result of the Proposed Development coming forward in conjunction with other surrounding cumulative schemes as listed within **ES Volume 1, Chapter 2: EIA Methodology**. Only those significant cumulative effects that are additional/ different to the main assessment are presented within this ES chapter.

Enabling, Demolition and Construction

17.38 No additional or different likely significant effects as a result of the enabling, demolition and construction cumulative effects assessment have been identified.

Completed Development

Socio-Economics

17.39 A Major Beneficial (**Significant**) effect has been identified, as the cumulative schemes are expected to bring forward an additional 3,000 homes, 650 purpose-built student accommodation (PBSA) and 70 senior living units. In combination with the housing delivery from the Proposed Development, this will be a significant contribution to local authority housing targets. This will exceed the scale of effect (Moderate Beneficial) determined for the Proposed Development in isolation.

LIKELY SIGNIFICANT EFFECT INTERACTIONS

17.40 Effect interactions arising between multiple individual effects associated with a single project on a receptor have been assessed and reported in **ES Volume 1, Chapter 16: Effects Interactions**.

17.41 In summary, the following significant effect interactions have been identified from the Proposed Development during demolition and construction:

- A **Significant** Adverse effect interaction (short-term) to Lots S1 and S2 due to combined noise and vibration effects;
- A **Significant** Adverse effect interaction (short-term) to Conduit Head Road and 1-8 Bradrushe Fields due to combined noise and vibration effects;
- A **Significant** Adverse effect interaction (short-term) to Lots S3 due to combined noise and vibration effects; and
- A **Significant** Adverse effect interaction (short-term) to Residents of Huntingdon Road Properties (141, 143 -145, 136, 138, 162, 171, 173 and 183) due to combined noise, vibration and visual effects.

17.42 The following significant effect interaction has been identified once the Proposed Development is complete and operational:

- A **Significant** Beneficial effect interaction on the local economy and labour market due to combined socio-economic effects.

Chapter 18: Environmental Management, Mitigation and Monitoring Schedule

TRIUM

INTRODUCTION

18.1 Mitigation refers to '*measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment*' as set out in the EIA Regulations (amended 2018, 2020)[1]. Throughout the design process, environmental mitigation measures have been incorporated into the Outline Parameters and Design Code for the Proposed Development to prevent and reduce potentially adverse effects, as discussed in **ES Volume 1, Chapter 3: Alternatives and Design Evolution**, and as such comprise part of the scheme for which planning consent is sought. These environmental mitigation measures are often referred to as 'primary'[2] or 'embedded' mitigation measures and have been described in this ES in **ES Volume 1, Chapter 3: Alternatives and Design Evolution** and **ES Volume 1, Chapter 4: The Proposed Development**; they are not repeated within this chapter of the ES. Securing these measures will be via the planning permission granted for the Proposed Development itself.

18.2 Environmental enhancement measures have been incorporated into the design of the Proposed Development where practical to improve the existing environmental conditions of the site and surrounding area. Again, these are described in this ES in **ES Volume 1, Chapter 4: The Proposed Development**; they are not repeated within this chapter of the ES. Securing these measures will also be via the planning permission granted for the Proposed Development itself.

18.3 Several Management Plans or Management Documents have also either been prepared to accompany the planning application or are committed to being prepared and implemented which relate to mitigating adverse environmental effects. These Management Plans/Documents provide for a range of 'secondary'[3] mitigation measures and are expected to be secured through obtaining planning consent for the Proposed Development and their drafting, agreement and implementation will be subject to Planning Conditions attached to the development consent if granted by South Cambridgeshire District Council (SCDC) and Cambridge City Council (CCC). Table 18.1 lists the Management Plans/Documents. The requirements or 'secondary' mitigation measures (which has been identified as being necessary by the Environmental Impact Assessment (EIA)) of each of the Management Plans/Documents is summarised below in Table 18.2 and where a Management Plan/Document has been prepared this has been submitted alongside the planning application.

18.4 Table 18.2 also presents other 'secondary' mitigation and environmental design commitments required for the Proposed Development which have been identified as being required by the EIA process and described within this ES, but which doesn't necessarily sit within a specific Management Plan or Management Document. These measures are typically project bespoke mitigation and design commitments that have been identified as being required by the EIA, both in relation to the enabling, demolition and construction works and following completion and during operation of the Proposed Development.

18.5 Table 18.2 also sets out any relevant 'tertiary'[4] mitigation. This is environmental mitigation and design commitments which are standard measures/commitments that would be adopted as a matter of course to meet legislative requirements and best practice guidance in relation to the enabling, demolition and construction works; and completed development as relevant to the EIA.

18.6 Monitoring can relate to observations and recordings throughout the enabling, demolition and construction works (for example noise, vibration or dust monitoring). In addition, monitoring can be relevant at the operational stage of a development, for example in relation to a staff or residential travel plan and use of cycle parking or electric vehicle charging facilities. Monitoring can also be relevant where mitigation needs to be checked and validated for success; for example, tree/vegetation growth over time.

18.7 The environmental mitigation, design commitments and monitoring presented in Table 18.2 are measures that the LPA will need to secure for the Proposed Development, either using Planning Conditions (related to the Planning Permission) or through the Section 106 Agreement.

18.8 The environmental mitigation, design commitments and monitoring set out in Table 18.1 and Table 18.2 have been developed through coordination with the Applicant, Design Team and EIA technical specialists to ensure the environmental mitigation, design and monitoring measures suggested are deliverable and are considered appropriate in terms of their ability to mitigate likely significant adverse environmental effects associated with the Proposed Development.

Table 18.1 Management Plans/Documents

MANAGEMENT PLANS/DOCUMENTS	ES / OTHER RELEVANT REFERENCE
PRE-COMMENCEMENT	
Piling Method Statement	ES Volume 1, Chapter 9: Noise and Vibration
Piling Risk Assessment	ES Volume 1, Chapter 13: Ground Conditions and Land Contamination
ENABLING, DEMOLITION AND CONSTRUCTION	
Construction Environment Management Plan (CEMP)	ES Volume 1, Chapter 5: Enabling, Demolition and Construction ES Volume 1, Chapter 6: Socio-Economics ES Volume 1, Chapter 8: Air Quality ES Volume 1, Chapter 9: Noise and Vibration ES Volume 1, Chapter 10: Built Heritage ES Volume 1, Chapter 11: Ecology and Biodiversity ES Volume 1, Chapter 13: Ground Conditions and Land Contamination ES Volume 1, Chapter 14: Water Resources, Flood Risk and Drainage ES Volume 1, Chapter 15: Climate Change and Greenhouse Gases
Construction Method Statement (CMS)	ES Volume 1, Chapter 5: Enabling, Demolition and Construction
Demolition Method Statement (DMS)	ES Volume 1, Chapter 5: Enabling, Demolition and Construction
Construction Traffic Management Plan (CTMP)	ES Volume 1, Chapter 7: Traffic and Movement ES Volume 1, Chapter 8: Air Quality
Dust Management Plan (DMP)	ES Volume 1, Chapter 5: Enabling, Demolition and Construction ES Volume 1, Chapter 8: Air Quality
Site Waste Management Plan (SWMP)	ES Volume 1, Chapter 5: Enabling, Demolition and Construction ES Volume 1, Chapter 13: Ground Conditions and Land Contamination
Material Management Plan (MMP)	ES Volume 1, Chapter 13: Ground Conditions and Land Contamination
Soil Resources Management Plan (SRMP)	ES Volume 1, Chapter 12: Land Take and Soils (Agriculture)
COMPLETE AND OPERATIONAL	
Framework Site Wide Travel Plan	ES Volume 1, Chapter 7: Traffic and Movement
Operational Waste Management Strategy	ES Volume 1, Chapter 4: The Proposed Development
Ecological Enhancement Plan	ES Volume 1, Chapter 11: Ecology and Biodiversity
Landscape Maintenance and Management Plan	ES Volume 1, Chapter 4: The Proposed Development

18.9 The requirements of each of the above plans/documents is summarised below in Table 18.2, along with other identified measures.

[1] *https://www.legislation.gov.uk/uksi/2017/571/schedule/4/made?view=plain*
[2] *https://www.nipa-uk.org/uploads/news/NIPAroundtablemitigationP2.pdf*
[3] *https://www.nipa-uk.org/uploads/news/NIPAroundtablemitigationP2.pdf*
[4] *https://www.nipa-uk.org/uploads/news/NIPAroundtablemitigationP2.pdf*

Table 18.2 Mitigation and Monitoring Schedule

ENVIRONMENTAL MITIGATION	ES REFERENCE
PRE-COMMENCEMENT	
SURVEYS, INVESTIGATIONS AND CONSENTS / LICENSES	
A number of surveys and investigations will be undertaken prior to the commencement of works across the site for each phase, envisaged to be as follows: • Ecological surveys to facilitate site clearance; • Geotechnical and contamination surveys and remediation; • Unexploded ordnance, if required; and • Asbestos surveys of the buildings to be demolished (after full vacant possession). All statutory, LPA consents and licences required to commence any on-site activity will also be obtained ahead of the works commencing and give the appropriate notice period. Applications will include but not necessarily be limited to: • A works license for any works on the public highway will be entered into for works on the existing highway in accordance with the Highways Act 1980 and Road Traffic Act 1998; • Hoarding and scaffold licenses for works on the perimeter boundary, if required; • Public Right of Way (PRoW) temporary diversions, which will be locally diverted at various stages of the enabling and construction programme to facilitate construction and to maintain public health safety; • Submission and approval from the Lead Local Flood Authority (LLFA) for the surface water drainage design for the site; • Ordinary water consents and environmental permitting to be obtained for any works associated with the watercourses (i.e. drainage outfalls etc.). The existing PRoW located in the north-west of the site will be temporarily diverted during the enabling works and final landscaping works. Temporary controlled vehicle crossing will need to be formed to all the developments of Plot A. Permission to temporarily divert existing Girton Public Footpath 5 (99/5), where required for construction activities, will be the responsibility of the Principle Contractor(s) to secure and will be subject to approval from Cambridgeshire County Council (CCoC). Request for temporary diversions and the duration of each diversion will be confirmed with CCoC prior to construction activities commencing for each development phase. Once construction activities are completed access to the PRoW will be reinstated along its existing alignment	**ES Volume 1, Chapter 5: Enabling, Demolition and Construction**
All contractors involved in the demolition and construction works associated with the Proposed Development will be registered with the Considerate Constructors Scheme (CCS), Fleet Operator Recognition Scheme (FORS) and Construction Logistics and Community Safety (CLOCS).	
SITE INVESTIGATIONS, REMEDIATION STRATEGY AND VERIFICATION (GROUND CONDITIONS AND LAND CONTAMINATION)	
Additional ground investigation (GI) will be undertaken as recommended in the AECOM Land Contamination Preliminary Risk Assessment (PRA). The GI will be completed prior to development commencing including areas not previous investigated. If risks from potential contamination is determined by the assessments carried following the GI, then a Remediation Strategy will be developed for the site, in consultation with GCSPS and the Environment Agency (EA), and appropriate remediation measures implemented as required. On completion of any remediation, the results will be reported within a Verification Report, to ensure that the remedial criteria set out in the remediation scheme have been achieved. The contamination assessment will be conducted in accordance with CIRIA C552. An adequate risk assessment following an intrusive ground investigation can be undertaken to identify significant adverse effects to human health. If the assessment identifies unacceptable risks, appropriate remedial measures and / or gas protection measures will be implemented during the enabling and construction phase of the Proposed Development in accordance with the Remediation Strategy developed for the site. Additional site investigation, including groundwater monitoring and assessment, will be completed prior to development commencing including areas not previous investigated and appropriate remediation implemented as required, which can be secured by planning condition.	**ES Volume 1, Chapter 5: Enabling, Demolition and Construction** **ES Volume 1, Chapter 13: Ground Conditions and Land Contamination**
Further ground gas monitoring will be undertaken to develop a comprehensive Ground Gas Risk Assessment (GGRA) to appropriate classify the site. Following the GGRA, the appropriate ground gas protection measures will be implemented into building design in accordance with BS8485:2015+A1:2019 'Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings', in line with of protective measures for methane and carbon dioxide ground gases for new buildings.	**ES Volume 1, Chapter 13: Ground Conditions and Land Contamination**
A piling risk assessment will be carried out to reduce as far as reasonably practicable the risk of development of preferential pathways (e.g. groundwater flow) between the Made Ground present and the underlying Principal Aquifer. The assessment will be in accordance with the Environment Agency's guidance documents including, piling into contaminated sites and will determine the risk to receptors through potential pollution scenarios considering any remediation measures proposed by the Applicant. A Piling Risk Assessment will be required to assess the risks associated with piling or other ground stability techniques to ensure no unacceptable risks to groundwater.	**ES Volume 1, Chapter 13: Ground Conditions and Land Contamination**
PILING METHOD STATEMENT (PMS)	
A Piling Method Statement (PMS) will be prepared and agreed upon prior to the commencement of works. Vibration limits will be set in accordance with BS5228-2 to minimise the risk of complaints or building damage. These limits will be controlled through implementation of the CEMP and vibration monitoring. The PMS will also include vibration and noise monitoring and action levels.	**ES Volume 1, Chapter 9: Noise and Vibration**
GROUND CONDITIONS AND LAND CONTAMINATION	
A 10m buffer zone of the Traveller's Rest Pit Site of Special Scientific Interest (SSSI) will be established prior to the commencement of construction works.	**ES Volume 1, Chapter 13: Ground Conditions and Land Contamination**
ENABLING, DEMOLITION AND CONSTRUCTION	
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)	
An Outline CEMP has been prepared in support of the planning application. It is anticipated that the preparation of a detailed CEMP will be conditioned and prepared (alongside any other required management plans) prior to any works on-site starting, in agreement with the Greater Cambridge Shared Planning Service (GCSPS). The Outline CEMP outlines precautions and measures to be implemented to minimise the exposure of workers, surrounding residents/commercial users and the general public to potentially harmful substances and contaminants, and includes: • A plan of the works, highlighting the likely sequences of activities, based on reasonable assumptions in terms of the sequencing of works and site logistics. A detailed methodology of these works will be set out in the final CEMP prior to these works commencing; • Details of site layout arrangements (including requirements for any temporary works) showing locations of site offices, plant and equipment, material storage etc.; and • General site logistics and day to day operations, procedures for any unexpected operations.	**ES Volume 1, Chapter 5: Enabling, Demolition and Construction**

ENVIRONMENTAL MITIGATION	ES REFERENCE
A contractor or contractors will be appointed to undertake the works, in lieu of their appointment the Outline CEMP sets out the principles and requirements that a contractor will have to adhere to and forms the basis for the development of a Detailed CEMP. This includes: • A commitment to environmental protection (all consultants and trade contractors will be invited to declare their support for this at tender stage). • Documentation of measures to comply with environmental aspects of any planning conditions. • Detailed control measures and activities to be undertaken to minimise likely environmental impacts, as well as associated roles and responsibilities. • Target criteria for environmental issues, where practical, such as water and energy consumption. • Any requirements for monitoring and record keeping. • Proposed noise, vibration, and dust monitoring levels to be agreed with CCC / SCDC. • A dedicated point of contact during normal working hours and in emergencies with responsibility to deal with environmental issues if they arise. • A review and monitoring regime of on-site performance against the Detailed CEMP provisions by the project team and regular environmental audits of its implementation. • The necessary level of management and control of demolition and construction practices. This includes advance notice of operations and duration of work that may cause noise, disruption to access, or other effects. **Working Hours** Working hours will be agreed with the CCC / SCDC, but are expected to be: • 07:00 – 19:00 hours on weekdays; • 07:00 – 13:00 hours on Saturdays; and • No working on Sundays, Bank or Public Holidays. • Start-up and close-down periods of up to an hour before and after core working hours will be used for activities such as arrival of workforce and staff on site; deliveries and unloading; maintenance and checking of plant and machinery; general refuelling; site inspections, and safety checks prior to commencing work; site meetings; and general site clean-up and departure. Some activities may need to be conducted outside the agreed working hours such as the following: • Seasonal and / or weather dependent / daylight dependent; • Construction plant repair and maintenance work; • Major concrete operations and other continuous operations; • Setting-up of traffic management schemes; • Short-term construction activities requiring road and railway closures / possessions; and • Delivery of abnormal loads in accordance with the requirements of the Highways Authority and Police, for example during mobilisation and demobilization. For these works the Principal Contractor will apply for dispensation in accordance with the CCC / SCDC noise nuisance guidance. **Housekeeping and General Site Management** Hoardings will be erected around development plots / parcels and in locations where the perimeter interfaces with the public and third to provide a clear and secure demarcation between operational activities and other areas. The hoarding will provide information regarding the Proposed Development and its progress. Particular attention will be paid to locations supporting high volumes of pedestrian movement (for example at the completed phase boundaries), demolition and construction routes, access gates and security arrangements. Hoardings will be lit from half an hour after sunset to half an hour before sunrise. Prior to the erection of any external floodlighting details will be agreed with the CCC / SCDC. The following measures will be implemented to mitigate enabling, demolition and construction impacts: • Prior to any demolition taking place, a pre-refurbishment / demolition asbestos survey will be undertaken. If asbestos is found, it will be removed and disposed of in accordance with UK best practice; • Works will be closely monitored by a surveyor to ensure that the required formation level is reached and no over excavation occurs. It is anticipated that excavated materials shall be hauled and stored at a dedicated stockpile area; • Protocols to be implemented on-site in instances of emergencies and environmental incidences will be set out within the Detailed CEMP for approval by CCC / SCDC; • Principal Contractors will be encouraged to explore options for collaboration within the Proposed Development and with other local sites in the area to manage where possible the import and export of fill material; and • The progress of Phase 1 will be monitored as it is expected to overlap with start of Phase 2 works. Opportunities will be explored for collaborating on holding areas and shared services when works programmes are developed in more detail, where possible. **Environmental Controls** The following mitigation and environmental controls will be implemented to collectively limit potential visual, noise, vibration, traffic, and dust impacts associated with the Proposed Development's construction works at the site: • Aesthetically appropriate site hoardings will be maintained; • Regular road sweeping will be undertaken; • High impact site activities and plant will be located away from neighbouring residential receptors, where practical; • Quiet plant will be selected where practical and will be regularly maintained; • Good housekeeping measures will be implemented at the site; • Site lighting will be directed away from sensitive receptors; • Site lighting will be turned off outside of normal working hours; • Scaffolding and active construction activities will be screened above hoarding levels, where practical; • Construction traffic management measures will be implemented (see '**Construction Traffic Management Plan**'; • Implentation and monitoring of dust management measures (see '**CEMP – Dust Management Plan**'; • Implementation and monitoring of noise and vibration measures (see '**CEMP – Noise and Vibration Controls**'; and • Temporary acoustic barriers will be used around potentially noisy activities.	

ENVIRONMENTAL MITIGATION	ES REFERENCE
An Environmental Risk Assessment (ERA) will be carried out for all work packages on the Proposed Development. The package specific ERA will assess, amongst other things, the environmental aspects and the associated risks of the works being carried out that may adversely affect the any receptors as a result. The ERA will be utilised in conjunction with the method statement for the works being carried out and appropriate mitigation measures or alternative methods of work will be identified and instigated. As a basis the risk assessment will consider the following: • The works and activities being undertaken; • The duration of these works and activities; • The number and types of vehicles and plant used; • The location of the works and the size of the site; • The prevailing meteorological conditions (wind speed, direction, and rainfall); • The proximity of sensitive receptors to the activity and their potential sensitivity to noise, dust, and vibration; • The existing levels of background noise, dust, and vibration e.g., from adjacent traffic and construction works; • The adequacy of the mitigation measures applied to reduce or eliminate noise, dust, and vibration; • The structure of building and foundations and any potential structure borne vibration transmission routes; and • Details of any fuels being stored on-site. **Non-Road Mobile Machinery (NRMM)** Suitable best practice mitigation measures for the site plant will be adhered to as follows to reduce the likelihood of significant adverse air quality effects from NRMM throughout the demolition and construction works: • All NRMM will comply with Stage IIIB of EU Directive 97/87/EC; • No vehicles or plant will be left idling unnecessarily; • An on-site speed limit will be enforced; • NRMM will be modern and well maintained. Should any emissions of dark smoke occur (except during start-up) then the relevant machinery will be stopped immediately, and any problem rectified before being used again; • Engines and exhaust systems will be regularly serviced according to manufacturer's recommendations and maintained to meet statutory limits/opacity tests; • Plant will be located away from the boundaries close to residential areas; and • Use of diesel or petrol powered generators will be avoided by using mains electricity or battery powered equipment where feasible and if safety concerns can be overcome. **Management and Monitoring** A Detailed CEMP will be produced by each appointed Principal Contractor, prior to works commencing on a development plot. The document will be submitted for review and regularly reviewed and updated to reflect the changes in site conditions, mitigations, or methodologies. The Detailed CEMP will define responsibilities and procedures for the management of the potential impacts on the environment arising during demolition, enabling and construction. A monitoring programme of the environmental effects of demolition and construction will be implemented to the agreed CCC / SCDC requirements. This programme will: • Evaluate the effectiveness of environmental mitigation and identify environmental problems and appropriate responses at an early stage. • Ensure that the works are carried out in accordance with the provisions of the Detailed CMP. • Identify and implement any environmental improvements that will contribute to the overall environmental performance of the Proposed Development. Site inspections and more formal audits will be undertaken and a checklist pro-forma, which will cover the environmental issues addressed in the Detailed CEMPs, used. Where a problem is identified, corrective action will be identified and implemented in conjunction with the Applicant, site managers and sub-contractors.	
CEMP – ECOLOGY AND BIODIVERSITY	
Prior to any site clearance or demolition works commencing, a pre-works check will be undertaken by an ecologist for protected or priority species. This will include: • Check for nesting birds, if works are programmed during the period (1 March to 31 August inclusive); • Check for badger setts; • Check for water voles in areas with wetland habitat; • Check for hedgehogs, brown hares, toads and reptiles, and relocation of such animals to suitable areas of retained habitat; and • Check of any buildings or trees for evidence of use by roosting bats. The need for further monitoring and/or ecological oversight by the ecologist will be dependent on the findings and will be determined on a case-by-case basis. The ecologist will undertake regular (at least quarterly) visits during construction until effective completion, or earlier if all possible risks to wildlife can be discounted. **Washpit Brook** No works will take place within 10m of the Washpit Brook unless previously agreed with an ecologist. The temporary crossing of Washpit Brook required in the northern part of the site to allow access across it during the sitewide cut and fill operation will be sited to minimise impacts on the brook and its vegetation. It will be installed on the same alignment as the flow control structure to ensure no additional trees need to be removed. It will be a clear span structure to avoid in-channel impacts. These details will be included within the CEMP, and their implementation will be secured through an appropriately worded planning condition. **Woodlands, Hedgerows and Other Linear Features** The appropriate design and layout of tree protection fencing will be detailed in a Tree Protection Plan at the reserved matters stage for each development plot. **Invertebrates** A proportion of the felled oak trees in the log pile in Plot J will be moved to a suitable area of retained habitat within the plot, to ensure that the Nationally Scarce species of timberworm beetle using the log pile is retained on site. **Great Crested Newt** Permanent newt fencing was installed alongside Eddington Avenue, either side of the Washpit Brook when the road was constructed as part of Phase 1 of the 2013 OPP, under the project's Natural England Great Crested Newt (GCN) Mitigation Licence. The temporary newt fence will be retained and maintained in condition good in this location until June 2031 under the current Natural England licence.	**ES Volume 1, Chapter 11: Ecology and Biodiversity**

ENVIRONMENTAL MITIGATION	ES REFERENCE
Site clearance and construction works within Amenity Cluster C will be overseen by an ecologist, and any newts found would need to be relocated to suitable retained habitat. This will be agreed with Natural England through a modification of the current licence. Monitoring of the numbers of GCNs within Pond 6 is a condition of the current Natural England licence, with surveys programmed for 2028 and 2031. The results of the monitoring will be reviewed as part of the Reserved Matters Application for Plot J, along with an up-to-date assessment of the suitability of the terrestrial habitat within Plot J, to determine whether any specific mitigation measures are required. Any such works, if necessary, will take place under a new Natural England mitigation licence or a modified version of the existing licence. **Common Toad** Site clearance and construction works within Amenity Cluster C, and Plots E1, F1, G and J will need to be overseen by an ecologist, with searches made of terrestrial habitat for toads prior to works commencing. Any toads found would need to be relocated to suitable retained habitat. **Lighting** Construction site lighting will only be turned on during the day (07:00-19:00) and switched off outside of these hours to minimise impacts on nocturnal wildlife. **Grass Snake** Site clearance and construction works within all parts of the site will need to be overseen by an ecologist, with searches made for grass snakes prior to works commencing. Any grass snakes found would need to be relocated to suitable retained habitat. **Barn Owl** Demolition of the building containing the nest and construction works in the vicinity of it, will be undertaken outside of the nesting period. There is significant variation in the nesting season of barn owls, which can commence as early in the year as January and continue into October or November. Demolition in the December prior to works commencing is recommended to ensure compliance with the legal protection afforded to barn owls. **Skylark** Topsoil stripping in the western part of the site will be undertaken in a manner that minimises the risk of damaging a skylark nest, which will include the following; • Works will commence in late summer/autumn (outside 1 March to 31 August), after the nesting period, wherever feasible; and • Where topsoil stripping needs to commence in spring or summer, the areas to be stripped will be surveyed in advance to confirm the absence of nests, and any nests present will be cordoned off and protected until the nest is no longer in use. **Whitethroat and Linnet** Tree felling, hedgerow and scrub clearance will be undertaken in a manner that minimise the risk of damaging any bird's nests, which will include the following: • Works should be undertaken between 1 September and 28 February inclusive, wherever feasible, to avoid the nesting season; and • Where works need to be undertaken during the nesting season (1 March to 31 August inclusive), vegetation will be surveyed in advance to confirm the absence of any nests; with any nests present to be cordoned off and protected until the nest is no longer in use. **Brown Long-Eared Bats** A Natural England licence will be required for the demolition of the farmhouse at Gravel Hill Farm. Works will take place when bats are absent, if possible, and under the supervision of a licensed ecologist. **Water Vole** Water voles will be relocated from the four temporary construction site ponds prior to them being in-filled. They will be relocated from the footprint of the works to construct a drainage discharge into the lagoon at Brook Leys. This will most likely be achieved by displacement, which involves manipulation of the habitat by vegetation strimming and de-watering (in relation to the ponds) to encourage animals to relocate to alternative nearby habitats. Works will take place under a Natural England licence, and there are seasonal restrictions on when such an operation can take place (currently 15 February to 15 April or 15 September to 31 October). **Badger** The four badger setts to be lost will need to be closed in advance of works commencing in relevant parts of the site. Closure will take place under a Natural England Badger Mitigation licence, following approved methods, as well as being undertaken within the appropriate seasonal window (1 July to 30 November inclusive). **Brown Hare** Site clearance and topsoil stripping within the western part of the site will be overseen by an ecologist, with searches made for brown hares prior to works commencing. Any animals found will be encouraged to move into retained habitat. **Hedgehog** Site clearance activities across the site will be overseen by an ecologist, with searches made for hedgehogs prior to works commencing. Any animals found will be relocated into retained habitat.	
CEMP – GROUND CONDITIONS AND LAND CONTAMINATION	
As required by the North West Cambridge Area Action Plan (2009), the Traveller's Rest Pit Site of Special Scientific Interest (SSSI) site will be safeguarded and protected as part of the Proposed Development to ensure that there is no adverse impact during the construction and operation of the Proposed Development. The measures that will be implemented to safeguard the site will be detailed in the Detailed CEMP. All earthworks operations will be undertaken in accordance with the following guidance: • BS1997:2004 Eurocode 7; • BS16907-1 to 7:2018 Earthworks (BSI, 2018); • BS6031:2009 Code of Practice for Earthworks (BSI, 2009); and • National Highways (NH) guidelines including Design Manual for Roads and Bridges (DMRB) Series 600 'Earthworks' (Highways England, 2016). Measures to be included within the Detailed CEMP, in relation to ground conditions and land contamination, include the following • Best practice will be adopted during construction to prevent or reduce as far as reasonably practicable spillage risk and spillage effects by adhering to the CEMP, where such measures are to be set out. The CEMP will address the management of concrete batching, concrete usage and accidental spillage relating to foundation and building construction; • Land disturbance will be reduced as far as is reasonably practicable and disturbed areas outside the development footprint will be revegetated as soon as possible after construction. Soil excavation will be undertaken with consideration given to the prevailing ground and weather conditions when programming the execution of the works to reduce the potential for mobilisation of exposed soil and / or sediment. Although not anticipated to be widely present across the majority of the site, if encountered, topsoil and subsoil will be kept separately during excavation; • Temporary construction compound areas will be located away from all significant surface water bodies where possible; • Washing out of vehicles or equipment will only take place in controlled areas; • Suitable areas for specific construction activities will be identified within the CEMP and consultation with the EA will take place before construction commences;	**ES Volume 1, Chapter 13: Ground Conditions and Land Contamination**

ENVIRONMENTAL MITIGATION	ES REFERENCE
• Chemicals, fuels and oils will be stored in secure and designated storage areas in accordance with the appropriate regulatory requirements, including the Control of Pollution (Oil Storage) (England) Regulations 2001 and Control of Substance Hazardous to Health (COSHH) Regulations 2002. Storage areas will need to be located on hardstanding areas to prevent the possible infiltration of contaminants into soils; • Re-fuelling of plant will take place in appropriate areas to be agreed in the CEMP i.e. in locations with an impervious base and are bunded or provided with interceptor drains. Spill kits will be kept with all vehicles on-site and all bowsers are to be double skinned or have a bund. Vehicles and equipment will not be left unattended during re-fuelling. To prevent materials leaking from static plant, such as pumps and generators, static plant will be placed on drip trays wherever practicable; • All pumps, generators and similarly fuelled equipment will be placed on drip trays or in a bunded area, and no vehicles or equipment will be allowed to enter any watercourses at any stage. Refuelling areas will be positioned a minimum of 50m away from any watercourse or drain. All vehicles, generators and similarly fuelled equipment will be maintained to a high standard to reduce as far as is reasonably practicable potential pollution incidents; • All valves, hoses and associated re-fuelling equipment will be regularly inspected to ensure that they are still in a suitable condition. This equipment will be protected from vandalism and unauthorised interference and will be turned off and securely locked when not in use; • All storage of drums containing hazardous material will be located within the main site temporary construction compound. Any spillages or leaks will be dealt with promptly and all waste disposed of in an appropriate manner. All tanks, drums and other containers will be clearly marked as to their contents. Before any tank is removed or perforated, all contents and residues will be emptied by a competent operator for safe disposal; • All bunds will have a capacity of at least 110% of the storage volume and will be covered where practical to prevent the collection of rainwater; and • Any staff involved in fuel handling will be given appropriate training, and site-specific procedures will be developed for all staff. Workers will be made aware of their statutory responsibility under section 85 of the Water Resources Act 1991 not to "cause or knowingly permit" water pollution. In addition, they will be made aware of their statutory responsibility under Regulations 38(1) and 12(1) of the Environmental Permitting Regulations 2019 not to "cause or knowingly permit" a water discharge activity or groundwater activity without an environmental permit. Rainfall runoff from areas where there is a risk of contamination will be managed using temporary drainage systems and or tankered offsite for treatment (including settlement of suspended solids and or oil interceptors) prior to discharge to local watercourses with the approval of the Environment Agency pursuant to a discharge licence. The drainage systems will incorporate pollution control systems designed in line with the CIRIA C532[5] or as agreed with the relevant authorities. Surface watercourses and waterbodies near worksites will be regularly inspected for signs of siltation or other forms of pollution in line with CIRIA Environmental Good Practice on Site Guide C811[6], whilst pumped groundwater, process effluents and construction site runoff will be tested to ensure compliance with discharge consent requirements – these measures are to be detailed in the CEMP. Best practice will be adopted during construction to prevent or minimise spillage risk and spillage impacts by adhering to the CEMP. The CEMP will address the management of concrete batching, concrete usage and accidental spillage relating to foundation and building construction.	
CEMP – DUST MANAGEMENT PLAN	
A scheme for dust monitoring, assessment and mitigation for all demolition and construction activities will be issued as part of a Dust Management Plan (DMP), implemented via the CEMP, to be approved in writing by the Local Planning Authority prior to commencement of the development. The DMP/CEMP will be in accordance with the best practice guidance laid out by the IAQM, and shall include: • A dust risk assessment to determine the level of dust risk the site poses and the applicable mitigation measures; • The identification of dust sensitive premises to be used as the location for dust monitoring, including any arrangements proposed for amending the selected locations if new dust sensitive premises are introduced; • The frequency and other arrangements for dust monitoring; and • The arrangements for reporting the results of dust monitoring and the implementation of mitigation measures to the Local Planning Authority. The construction shall thereafter be carried out in accordance with the DMP/CEMP for dust monitoring, assessment and mitigation for all demolition and construction activities unless otherwise approved in writing by the Local Planning Authority. Following the implementation of these measures: • All dust and air quality pollutant emission incidents and complaints will be recorded and responded and will be made available for local authority when requested. Equipment like Disc cutters, table saws, sanders, etc., will have dust suppression or a dust collection facility fitted. Dust-generating materials like stockpiles of sand, earth, cement, other fine aggregates will be covered when not in use; • A wheel washing system will be implemented for all construction vehicles. Commercial road vehicles attending the site will meet European Emission Standards pursuant to the EC Directive 98/69/EC of Euro 4 for petrol vehicles and Euro 6 for diesel vehicles and Euro VI for all lorries and heavy goods vehicles; and • The adopted public highway within the vicinity of the site will be swept within an agreed time frame as and when reasonably requested by any officer of the Highway Authority. Measures adopted by the DMP will include as a *minimum*: **Communication** • Develop and implement a stakeholder communications plan that includes community engagement before work commences on site; • Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary; • Display the head or regional office contact information; **Site Management** • Record all dust and air quality pollutant emissions complaints; • Make the complaints log available to the local authority when asked; • Record any exception incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book; • Hold regular liaison meetings with other high risk construction sites within 250m of the site boundary, to ensure plans are coordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes; **Monitoring** • Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills in close proximity to the site boundary, with cleaning to be provided if necessary; • Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked; • Increase the frequency of inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions;	**ES Volume 1, Chapter 5: Enabling, Demolition and Construction** **ES Volume 1, Chapter 8: Air Quality**

[5] *Control of Pollution from Construction Sites: Guidance for Consultants and Contractors: CIRIA C532 (2001)*
[6] *Environmental Good Practice on Site (fifth edition): CIRIA C811 (2023)*

ENVIRONMENTAL MITIGATION	ES REFERENCE
• Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction; **Preparing and Maintaining the Site** • Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible; • Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site; • Enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period; • Avoid site runoff of water or mud; • Keep site fencing, barriers and scaffolding clean using wet methods; • Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on site cover as described below; • Cover, seed or fence stockpiles to prevent wind whipping; **Operating Vehicle/ Machinery and Sustainable Travel** • Ensure all Non-Road Mobile Machinery (NRMM) comply with London's NRMM emission standards; • Ensure all vehicles switch off engines when stationary – no idling vehicles; • Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable; • Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate); • Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials; • Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing); **Operations** • Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems; • Ensure an adequate water supply on the Site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate; • Use enclosed chutes and conveyors and covered skips; • Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on equipment wherever appropriate; • Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods; **Waste Management** • Avoid bonfires and burning of waste materials; **Demolition** • Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust); • Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. • Avoid explosive blasting, using appropriate manual or mechanical alternatives; • Bag and remove any biological debris or damp down such material before demolition; **Earthworks** • Re-vegetate earthworks and exposed areas/soil stockpiles to minimised surfaces as soon as practicable; • Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; • Only remove the cover in small areas during work and not all at once; **Construction** • Avoid scabbling (roughening of concrete surfaces), if possible; • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place; • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery; **Trackout** • Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site; • Avoid dry sweeping of large areas; • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport; • Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable; • Record all inspections of haul routes and any subsequent action in a site log book; • Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned; • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable); • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; and • Access gates to be located at least 10 m from receptors where possible.	

ENVIRONMENTAL MITIGATION	ES REFERENCE
CEMP – NOISE AND VIBRATION CONTROLS (BEST MANAGEMENT PRACTICES)	
Noise shall be minimised by adopting Best Practicable Means (BPM) as standard working practices across the site to ensure that noise is reduced whenever practicable. The following provisions are examples of BPM and will be adhered to where practicable throughout the enabling, demolition and construction programme: • The production of a construction noise and vibration report that evaluates the construction activities and provides specific BPM to reduce noise and vibration; • Installing a solid and continuous barrier around the site; • Limiting high impact activities (e.g., breaking and piling) to specific times during the day, e.g., 1 hour on – 1 hour off, or 09:00-12:00 and 14:00-17:00; • Plant is to be properly maintained and operated in accordance with manufacturer's recommendations. Electrically powered plant is preferred, where practicable, to mechanically powered alternatives; • Where feasible, all stationary plant would be located so that the noise effect at all occupied homes and commercial buildings is minimised and, if practicable, every item of static plant when in operation is to be sound attenuated using methods based on the guidance and advice given in BS 5228[7]; • Trade contractors would at all times apply the principle of Best Practicable Means as defined in Section 72 of the Control of Pollution Act 1974 (COPA), and carry out all work in such a manner as to reduce any disturbance from noise and vibration to a minimum; and • The timing of building operations will be critical in avoiding noise and vibration nuisance to surrounding areas and premises. The contractor would identify particularly sensitive periods in the works so that the potential problems can be minimised and that early and good public relations with the adjacent occupants of buildings are maintained. During the detailed working up of the construction programme and preparation of any future CEMP(s), the BPM measures to mitigate potential noise and vibration impacts on nearby noise sensitive premises will be defined and agreed with the CCC / SCDC, with the primary method for the control of noise and vibration being a Section 61 agreement under the Control of Pollution Act 1974 ('COPA') with the CCC / SCDC reported, with the reports highlighting when it is likely that the construction limits will be exceeded, so that construction activities can be effectively altered to mitigate. In addition, a Section 61 agreement also sets out a dispensation and variation procedure under which consent can be applied for to carry out works which would potentially exceed the agreed noise and vibration limits, or must occur at times when such work is otherwise not approved. Such dispensation/variations would be applied for where there are good engineering, safety or practical reasons for undertaking the works at these times. The selected contractor should adopt measures, including site supervision arrangements, to reduce noise and vibration to a minimum in accordance with BPM, as defined in Section 72 of the COPA. **Noise Management:** Noise from the site when measured 3 metres from the façade (free field) of any noise sensitive property, such as residential, will not exceed the following levels, subject to background reading measures prior to commencement: • LAeq (1 hour) 67 dB between 07:00 and 19:00 (including in the normal working hours); • LAeq (1 hour) 57 dB between 19:00 and 22:00; and • LAeq (5 minutes) 37 dB between 22:00 and 07:00. If noise at a sensitive receptor, such as residential properties, is likely to exceed the levels stated above, the sensitive receptor and CCC / SCDC will be pre-notified, in writing, at least 5 full working days prior to work commencing, with the following information: • Site location; • Duration of site operation, including schedule of operations likely to cause noise and their hours of work; • Noise characteristics; and • Details of community liaison. To mitigate construction traffic noise, the following measures will be employed as best practice: • Vehicles employed for any activity associated with the construction works will, where reasonably practicable, be fitted with effective exhaust silencers and shall be maintained in good working order and operated in a manner such that noise emissions are controlled and limited as far as reasonably practicable; • Time slots will be adopted for deliveries to ensure that convoys of vehicles do not arrive simultaneously and to avoid unnecessary idling on-site; • Strict controls to prevent temporary parking on kerb-sides in the vicinity of noise sensitive receptors; and • The use of sufficient clear signage to ensure that construction vehicles use only designated routes. **Vibration Management:** All available techniques will be used to minimise, as far as is appropriate, the level of vibration to which operators and others in the neighbourhood of site operations will be exposed. The priority will be to avoid the generation of vibration, and where vibration is unavoidable, to control vibration at source. Measures which should be taken include the following: • All activities with the potential to cause vibration levels greater than or equal to 1.0 mm s-1 PPV, eg piling, will be identified in the CMS prior to works commencing; • Compaction will be via vibrating rollers wherever possible; • A mitigation plan will be set out, including justification for siting of plant, types of plant selected, periods of use, working hours, access points, schedule of works likely to cause complaints (if not pre-notified). Construction activities will be carried out using the guidance in 'BS 6472-1: 2008 'Guide to evaluation of human exposure to vibration in buildings, Vibration sources other than blasting" and 'BS 7385-2: 1993, 'Guide to damage levels from ground borne vibration"" and 'BS 5228-2:2009 'Code of practice for noise and vibration control on construction and open site, Vibration". In accordance with BS6472-1:2008, vibration levels should not exceed 0.4 m.s-1.75 in neighbouring properties. If vibration at a sensitive receptor, such as residential, is likely to exceed 0.4 m.s-1.75, the sensitive receptor and CCC / SCDC will be pre-notified, in writing, at least 5 full working days prior to work commencing, with the following information: • Site location - the location of a site in relation to the sensitive receptor; • Duration of site operations, including schedule of operations likely to cause vibration and their hours of work; • Vibration characteristics - e.g. whether it is continuous, intermittent or impulsive; • Effect on buildings; • Details of community liaison. Vibration levels which have the potential to cause building damage will not be tolerated.	**ES Volume 1, Chapter 5: Enabling, Demolition and Construction** **ES Volume 1, Chapter 9: Noise and Vibration**

[7] *British Standard (BS), 2014. BS 5228. Code of Practise for Nosie and Vibration Control on Construction and Open Sites.*

ENVIRONMENTAL MITIGATION	ES REFERENCE
CEMP – WATER RESOURCES, FLOOD RISK AND DRAINAGE	
The CEMP will outline measures to protect surface and groundwater during the enabling, demolition and construction phase. This will include the following: • Storage of any hazardous substances (including solids and liquids) within well-contained and secured bunded areas to remove the risk of migration to exposed groundwater or surface water runoff; • Dewatering of any exposed groundwater is expected to be disposed appropriately in accordance with the EA requirements; • Wheel wash facilities are expected to be provided for vehicles moving to and from the site to prevent unacceptable levels of silts and debris entering the surface water network; and • Construction plant/materials are anticipated to be stored on hardstanding surfaces where possible to minimise silts and debris within surface water runoff. • Foul and surface water discharge during enabling, demolition and construction will be managed through standard construction practice; • The risk to groundwater contamination as a result of excavation and substructure works will be managed through standard construction practice, including measures such as: – Storage of any hazardous materials within impermeable bunded areas to remove the risk of migration to exposed ground water; and – Dewatering of exposed groundwater; • Any pumped groundwater will be treated appropriately and disposed appropriately in accordance with discharge consent requirements; • Potable water demand during enabling, demolition and construction will be managed through standard construction practice The CEMP will also include requirements to ensure appropriate consents/permits are obtained for any construction-phase discharges of waste (including waste water) and permits obtained as necessary e.g. under the Environmental Permitting Regulations 2010 (as amended), and will also outline requirements to ensure adequate water supply for the site during the enabling, demolition and construction phase.	**ES Volume 1, Chapter 14: Water Resources, Flood Risk and Drainage**
SITE WASTE MANAGEMNT PLAN (SWMP)	
An Outline Site Waste Management Plan (SWMP) has been prepared to support the planning application, and considers the need to lessen the overall impact of waste generation through recycling of materials from the construction phase of the Proposed Development. The Principal Contractors and sub-Contractors will prepare a Detailed SWMP prior to works commencing onsite. The Outline SWMP proposes: • Any concrete or tarmac excavated on site will be crushed for reuse as secondary aggregate subject to obtaining the necessary permits or sent to an off-site facility for processing. • The Principal Contractor is expected to keep signed waste transfer notes (WTN) or consignment notes to document all the waste disposed of or transferred from the site, retained for a period in accordance with all prevailing legislation. • Emphasis will be placed on the provision of appropriate storage conditions for raw materials and key waste streams relating to each development. This will include the segregation of material for reuse or recycling on-site. Where this is not practicable, materials will be segregated for off-site recycling. • A waste storage area will be set out with clearly marked out areas for the segregation of each waste stream to support reuse and recycling. • Sufficient waste skips will be provided to maintain the stie in a neat and tidy state. They will be removed and replaced once full. • Wherever possible, materials will be recycled and re-used either on-site or off-site. The Proposed Development will target the avoidance of waste to landfill and has a target of 95% of the waste generated on-site to be re-used or recycled. The Detailed SWMP will focus on minimising waste being generated through the following measures: • Material ordering will be carefully managed to minimise waste arising from over-ordering; • Minimal packaging will be requested from suppliers. A take-back service will be required for all suppliers, especially for pallets etc.; • Materials will be ordered cut to required sizes (rather than standard sizes); • Pre-fabrication of construction components off-site will be used were possible; • Appropriate storage areas will be pre-prepared on-site to protect materials for weather damage prior to use; • Active management of handling and storage areas (especially where close to local sensitive receptors), including water spraying and/or sheeting of stockpiles and surfaces in dry and windy conditions; • Segregation of waste materials to ensure maximum value is derived from the materials generated; • Compaction to reduce the overall volume of waste and reduce delivery collections; • Minimising the prolonged storage of debris on-site; and • Inclusion of a specific waste performance clause in procurement documentation to drive performance of the project. The SWMP will allow for waste streams to be estimated and monitored and goals set with regards to the waste produced. The SWMP will require that the construction contractor segregates waste streams on-site, prior to them being taken to a waste facility for recycling, disposal or reuse in accordance with appropriate permit. All waste removal from the site will be undertaken by fully licensed waste carriers and taken to permitted waste facilities.	**ES Volume 1, Chapter 5: Enabling, Demolition and Construction** **ES Volume 1, Chapter 13: Ground Conditions and Land Contamination**
MATERIAL MANAGEMENT PLAN (MMP)	
The CEMP will also include a Material Management Plan (MMP) following guidance in Definition of Waste: Code of Practice (DoWCoP)[8]. The re-use of site-won materials will be under a MMP where the DoWCoP requirements have been met and approval from the appropriate regulator (the Environment Agency) has been granted; a Qualified Person under the DoWCoP will be engaged to approve the MMP and a verification report will be produced to demonstrate that the MMP has been properly enacted. Where material requires alteration, remediation or improvement prior to reuse, an environmental permit or an exemption will be sought prior to the reuse of material, where required. Where soil materials are deemed to be surplus to the requirements of the Proposed Development, such materials, will be classified as waste under the Waste Framework Directive (WFD) (2009/98/EC) as either hazardous (17-05-03) or non-hazardous (17-05-04) soils. Classification will be undertaken using a proprietary assessment tool such as "HazWasteOnlineTM". Waste deemed to be hazardous, will require testing using the Waste Acceptance Criteria (WAC) prior to disposal to landfill. The 'Waste Duty of Care Code of Practice' (Department for Environment, Food and Rural Affairs, 2018) notes that there is a duty of care for the safe management of waste, particularly for the protection of the environment and human health. The duty of care is applicable if waste is imported, produced, carried, kept, treated, disposed of or have control (as a dealer or broker) of waste.	**ES Volume 1, Chapter 13: Ground Conditions and Land Contamination**

[8] *Contaminated Land: Applications in Real Environment (CLAIRE) (2011); Definition of Waste: Code of Practice*

ENVIRONMENTAL MITIGATION	ES REFERENCE
SOIL RESOURCES MANAGEMENT PLAN (SRMP)	
The primary measures to mitigate the impacts on soil resources will be set out in a Soil Resources Management Plan (SRMP). The SRMP will consider the measures set out in the Defra Construction Code of Practice for the Sustainable Use of Soils which includes confirmation of the different soil types and depths (based on the soil surveys already undertaken); the most appropriate re-use for the different types of soils within the detailed design; and the proposed methods for handling, storing and replacing soils on site. The adoption of the SRMP will ensure that the soil resources on site will be able to continue to fulfil their various ecosystem services and functions. The aim of the SRMP will be to re-use displaced soil resources on-site in the detailed design of open spaces and green infrastructure. The quality of soils retained on-site would be maintained by following good practice guidance on soils handling and storage, particularly to minimise soil handling and avoid compaction and biodegradation of soils. The reinstated soil resources shall be monitored for up to five years following the completion of the Proposed Development, for signs of such issues as poor drainage and anaerobism which shall be ameliorated as necessary.	**ES Volume 1, Chapter 12: Land Take and Soils (Agriculture)**
CONSTRUCTION TRAFFIC MANAGEMENT PLAN (CTMP)	
A Framework Construction Traffic Management Plan (CTMP) has been prepared and submitted with the planning application. The CTMP will minimise disturbance that could potentially arise from construction traffic generated by the Proposed Development. The key elements of this Management Plan include: • Routing traffic to the site to maintain heavy construction traffic on the adjacent Strategic Road Network (SRN) so far as possible and thereby minimize the impact of construction traffic on local communities; • Signage to identify access routes and to inform motorists that the local roads are accommodating construction traffic; and • Scheduling construction traffic movements (equipment and materials), when possible, to avoid the peak traffic periods at the beginning and end of each working day and other sensitive periods, to minimise potential disturbance to existing residents, users or visitors locally or safety impacts at junctions. The CTMP references the CEMP and details the following measures in relation to strategies to reduce construction traffic impacts: • Vehicle routes will be discussed and agreed with the relevant authorities; where possible, site traffic will be directed to utilise pre-approved routes; • Access to development plots / parcels will be paved with a bound material (for at least 15m) into the site from the boundary of the adopted public highway; • Any temporary gates used for site security will be set back at least 15m from the boundary of the adopted public highway to enable a delivery/muck away vehicle to wait wholly off the adopted public highway while the gates are opened and closed, or they must remain open throughout the entire working day; • When practical, access gates will be a minimum of 6.5m wide to facilitate construction traffic; • Any parking for operatives or contractors will be provided within the site boundary and coordinated with the works by the Principal Contractor. Visitor parking will also be provided within the site boundary; • All deliveries will be pre-booked with the logistics management teams through a delivery management system. Deliveries will be discussed at regular coordination meetings to manage peaks and reduce waiting times offsite; and • The appointed Principal Contractors will be expected to comply with the following schemes in addition to all local policy requirements: – Community Logistics and Community Safety (CLOCS)[9]; – Fleet Operator Recognition Scheme[10]; – Considerate Contractor Scheme[11]; and – All goods vehicles over 3.5 ton will be Fleet Operators Recognition Scheme (FORS) Silver compliant; • All construction traffic entering and leaving the site will be strictly controlled. Vehicles delivering to or removing materials from the site will travel via designated routes, pre-agreed with CCC / SCDC and the Highways Agency; • Deliveries will be avoided between 08:00 – 09:00 and 15:00 – 16:00 due to the local Primary School in Phase 1 during term time; • Construction processes will be programmed to avoid deliveries during peak traffic periods to reduce delays and ensure that drivers can make efficient use of their drivable hours; • Deliveries after 15:00 will be rare due to limited on-site processing capacity; • Due to the size of the site, holding areas will be established on site allowing deliveries to be concentrated outside of peak local traffic times. If required suitable holding areas outside site will be agreed with the relevant authorities; • Principle Contractors will be encouraged to utilise rail freight where benefits can be demonstrated. • Measures to ensure effective management of Heavy Good Vehicle (HGV) traffic will comprise the following: – Suppliers will be informed of specified approach and departure routes to prevent use of unsuitable roads; – HGV deliveries will be scheduled to avoid peak periods; – Approach and departure routes will be clearly signposted and clear controls for access to the site will be provided; – Parking management and staff travel. • A construction Staff Travel Plan will be produced by the Principal Contractor for each development parcel or plot and will set out measures to encourage all operatives to use sustainable means of transport. The use of bicycles as a form of transport will be encouraged, with bicycle storage and shower facilities made available onsite. This will generally be adjacent to site welfare compounds. The following measures will be implemented to address residual traffic and movement effects arising during enabling, demolition and construction. These will be secured by a suitably worded planning condition as part of the CTMP: • Local residents will be consulted and informed about the construction and traffic management proposals to maintain good community relations; • Adoption of reasonable endeavours to publicise employment opportunities in local press to recruit staff locally and thereby reduce the length of journeys to work for construction staff; and • Adoption of reasonable endeavors to sub-contract tenders from local suppliers to reduce the length of journeys to work for construction staff.	**ES Volume 1, Chapter 7: Traffic and Movement**
ECOLOGY AND BIODIVERSITY	
Great Crested Newts The temporary newt fence separating Pond P1 in the Madingley Road Park and Ride from Amenity Cluster C needs to be retained and maintained in good condition until the sports provision in Amenity Cluster C and the adjacent Plot G have been constructed. This is a condition of the Natural England licence and is therefore already secured at the time of the production of this ES.	**ES Volume 1, Chapter 11: Ecology and Biodiversity** **Arboricultural Impact Assessment**

[9] *Available from: https://www.clocs.org.uk/*
[10] *Available from: https://www.fors-online.org.uk/cms/*
[11] *Available from: https://www.ccscheme.org.uk/*

ENVIRONMENTAL MITIGATION	ES REFERENCE
Landscaping works within the narrow strip of land along the eastern edge of Amenity Cluster C will need to be carried out under ecological supervision and any newts present captured and relocated appropriately. This will need to be agreed with Natural England through a modification of the current licence. It is therefore already secured due to the legal requirement to comply with the licence conditions or modify the licence accordingly. Newts associated with Pond 6 may start to utilise the land within Plot J if there is a significant increase in the numbers of newts breeding within the pond. Monitoring of the numbers of GCNs within Pond 6 is a condition of the Natural England licence, with surveys programmed for 2028 and 2031; monitoring is therefore already secured. The results of the monitoring will need to be reviewed as part of the Reserved Matters Application for Plot J, along with an up-to-date assessment of the suitability of the terrestrial habitat within Plot J, to determine whether any specific mitigation measures are required. Any such works, if necessary, would need to take place under a new Natural England mitigation licence or a modified version of the existing licence. **Water Vole** Water voles will need to be relocated from the four temporary construction site ponds prior to them being in-filled. They will also need to be relocated from the footprint of the works to construct a drainage discharge into the lagoon at Brook Leys. This would most likely be achieved by displacement, which involves manipulation of the habitat by vegetation strimming and de-watering (in relation to the ponds) to encourage animals to relocate to alternative nearby habitats. Works would need to take place under a Natural England licence, and there are seasonal restrictions on when such an operation can take place (currently 15 February to 15 April or 15 September to 31 October). **Tree Protection** The following principles for the protection of retained trees will be adopted across the site for the duration of the project: • All retained trees will be protected by fencing that will form the Construction Exclusion Zone (CEZ). • Where fencing cannot provide the necessary protection measures, alternative systems will be installed that will ensure retained trees are protected. This may include the use of either temporary or permanent ground protection. • There will be no storage of materials, or access for construction workers or machinery within any CEZ. • There will be no excavation within a CEZ. All utilities and underground services will be located outside the CEZ or tap into existing service routes. • Any storage or mixing station located outside of a CEZ will be located in a place that minimises the risk of contaminated runoff entering the CEZ and damaging the rooting environment. This may be achieved by using a non-permeable membrane on the ground, surrounded by sandbags to contain any spillage. • There will be no fires within a CEZ. • There will be no use of herbicides within a CEZ.	
GREENHOUSE GASES (GHG)	
The following GHG mitigation measures will be considered at the detailed design stage for incorporation during the construction of the Proposed Development to further reduce the GHG impact: • Where practical, building materials could be sourced locally to reduce transportation pollution and support the local economy; • Where possible, low-carbon materials and/or recycled materials could be used in replacement of virgin materials. Specifically, all cement used in construction could have up to 40% fly ash, Ground Granulated Blast-furnace Slag (GGBS) or recycled binders incorporated into the concrete mixture; • Low carbon reinforcement could be integrated into the design; • The design could consider higher levels of recycled content of aluminium in the glass façade and windows; • All reinforcement steel could be sourced from the UK ensuring it has high recycled content; • Higher strength concrete cladding could be considered to reduce thickness; and • Blockworks with high recycled or cement replacement could be considered.	**ES Volume 1, Chapter 15: Climate Change and Greenhouse Gases**
COMPLETED DEVELOPMENT	
ECOLOGICAL ENHANCEMENT PLAN	
An Ecological Enhancement Plan has been prepared in support of the planning application, which sets out a range of measures to incorporate into the future detailed design of the Proposed Development, including the following: **Integrated Bird Boxes** Each residential plot will deliver integrated bird boxes, and the number of bird boxes will equal (or exceed) the number of dwellings within the plot. Non-residential building plots will also need to deliver integrated bird boxes, and the number of bird boxes must equal (or exceed) 10 bird boxes for the first 1,000m^2 of building footprint, with an additional box required for every additional 100m^2 of building footprint. **Integrated Bat Boxes** Each residential plot will deliver integrated bat boxes. The number of bird boxes will equal (or exceed) 25% of the number of dwellings within that plot. **Barn Owl** At least two barn owl boxes will be installed within areas of extensive grassland habitat, to be provided in the western part of the site. **Woodcock** The area of grassland to the north of Pheasant Plantation will be managed to provide suitable foraging habitat for woodcock. **Woodlands** The appropriate design and layout of tree protection fencing will be detailed in a Tree Protection Plan at the reserved matters stage for each development plot; The existing chestnut paling along the northern edge of Storey's Way Wood will be extended to also run along the western and southern edge of the woodland to discourage public access, when Plots H2, H3 or J come forward for development. The existing chestnut paling along the northern and eastern edges of Cricket Pitch Wood will be extended to also run along the southern edge of the woodland to discourage public access when Plot J comes forward for development. Chestnut Paling will be installed along the northern and southern edges of Pheasant Plantation when Amenity Cluster C comes forward for development, or the security fence that currently restricts access to the woodland from Brook Leys is removed. **Veteran Oak Tree** The Reserved Matters Application for Plot F2 will ensure that the layout and height of buildings is designed to minimise the impact of changes to wind patterns on the tree. Preparation and submission of an Arboricultural Impact Assessment for Plot F2 will be secured by way of an appropriately worded planning condition.	**ES Volume 1, Chapter 11: Ecology and Biodiversity**

ENVIRONMENTAL MITIGATION	ES REFERENCE
A Veteran Oak Management Plan was prepared in 2013 to guide long-term management of the tree (Lockhart Garratt Report, Document Reference 14-0209/3639 Rv4). This document will be reviewed and updated to account for the construction of Phase 1 and ensure long-term survival of the tree going forwards, including the requirements for watering. This is to be secured by way of an appropriately worded planning condition. **Washpit Brook** The play area in Amenity Cluster C will be designed so that the parts of the play area located within 10m of Washpit Brook comprise soft rather than hard landscaping, to avoid further encroachment of the riparian zone. This will be effectively secured by a planning condition relating to BNG, as the requirement to achieve at least a 10% gain will ensure that the detailed design avoids any further encroachment into the riparian zone. **Barbastrelle Bats** The layout of buildings with Plot J in particular will be designed to minimise light spill onto Storey's Way Wood. This is to be secured by way of an appropriately worded planning condition, requiring the Reserved Matters Application to minimise light spill onto retained woodland, hedgerows and other suitable habitat. **Hedgehog Highways** All development plots will allow the movement of hedgehogs across the plot. Any run of close boarded fencing will include at least one 13cm x 13cm hole, with a hedgehog highway sign fastened above it. There will be sufficient holes to allow hedgehogs to access all rear gardens of residential properties and any areas of public open space. **Amphibians and Reptile Hibernation Sites, Log Piles** Each RMA will include a commitments to construct at least one reptile or amphibian hibernation site, or one log pile in a suitable locations, to provide an additional wildlife feature. **Green and Brown Roofs** All flat roofed buildings will incorporate either a green or brown roof (or combination of either with solar panels). Full details of the type and location of green /brown roods will be provided as part of each RMA. **Invertebrates** Disease-resistant elm cultivars will be included in the planting mix for areas of open space. A proportion of the felled oak trees in the log pile located on Plot J will be moved to a suitable area of retained habitat within the plot, when this plot comes forward for development. **Otters** Two artificial otter holts will be provided along the Washpit Brook. Details of proposed design and materials will be set out at the RMA stage.	
LANDSCAPE MAINTENANCE AND MANAGEMENT PLAN	
A Landscape Maintenance and Management Plan has been prepared in support of the planning application, which sets out the strategic approach to the maintenance and management of the Proposed Development hard and soft landscape. Further specifics will be brought forward at the Reserved Matters Application stage.	**ES Volume 1, Chapter 4: The Proposed Development**
OPERATIONAL WASTE MANAGEMENT STRATEGY	
An Operational Waste Management Strategy (OWMS) has been prepared in support of the planning application, which considers the potential impacts that may arise from waste generated during the operational phase of the Proposed Development, with the overall aim of developing a strategy for legislative compliance and good practice in separation, storage and collection of waste arising. The OWMS demonstrates the following: • The quantity of municipal waste the Proposed Development is expected to generate once operational; • How operational waste will be managed in accordance with the Waste Hierarchy; • The Proposed Development supports the separate collection of Dry Mixed Recycling (DMR) (at least card, paper, mixed plastics, metals and glass), food waste and residual waste; • How operational waste management performance will be monitored and reported; and • Measures such as consolidated, smart logistics and community-led waste minimization schemes have been explored. The developer will be contractually responsible for all operational waste reporting for the Proposed Development. This reporting will be based either on number of container lifts per waste stream, or collection weight data if available. Data requirements and reporting methods will be agreed with the relevant authorities once all elements are occupied. Upon move in, an information pack will be provided to residents detailing measures to reduce waste, including how to reduce avoidable food waste and opportunities to minimise the use of single use items. Details of the local reuse and recycling centres will be provided to residents to advise them how to manage waste streams not collected by Greater Cambridge Shared Waste Service (GCSWS) as part of their standard service offering.	**ES Volume 1, Chapter 4: The Proposed Development**
FRAMEWORK SITE WIDE TRAVEL PLAN	
A Framework Site-Wide Travel Plan has been prepared in support of the planning application, which identifies how, under the long-term stewardship of the Applicant, the ongoing future travel needs of the community will be met, providing opportunities for healthy living, sustainable travel patterns, and helping to meeting wider carbon reduction targets. The Framework Site-Wide Travel Plan provides the framework within which future Travel Plans will be developed. The Framework Site-Wide Travel Plan includes a range of measures, including, but not limited to: • Provision of high quality end of journey facilities. In workplaces, provide shower and changing facilities for people that cycle or wheel. Secure lockers for the storage of clothes, equipment, and helmets; • Provision of cycle and wheeler maintenance facilities within the Proposed Development such as 'Dr Bike' days with free servicing. This will include; bike repair stations, Training, Personalised Travel Plans, and exploration of community cycle led rides; • Encourage organisations to offer employees Cycle to Work scheme opportunities; • Continue to develop and implement new micromobility hubs as appropriate; • Encourage organisations to provide subsidy / loans for season tickets for staff; • Car Club provision will be expanded for use by both residents and employees. It is an aim to ensure these vehicles are electric. Discounted membership and mileage will be explored; • Vehicles parking will be restricted at a ratio of 1:1 for private residential properties to discourage ownership of more than one vehicle; • Continue to utilise the virtual 'Residents Hub' to inform residents of new transport offers, initiatives or external matters; • Travel Information Packs (tailored for employees and residents) which will contain summarised information on the Travel Plan and sustainable travel; • A comprehensive management structure for the Travel Plan has been developed as part of the 203 OPP. This will be continued and, where necessary, further enhanced; • Encourage employment building occupiers to adopt their own agile / flexible working schemes to promote working from home. This may reduce the need to travel for some residents. Phase 1 of the 2013 OPP already has a Full Residential Travel Plan which is accredited "Very Good" within Modeshift Stars. A Full Residential Travel Plan will be required to cover the residential elements of the Proposed Development going forward. The Residential Travel Plan will be prepared prior to occupation, prepared in co-ordination with the Travel Plan Manager and relevant stakeholders, and utilise the successful measures implemented for Eddington. The document will be submitted to CCoC for review. When organisations meet the CCoC travel plan thresholds, a full Travel Plan or Travel Plan statement will be prepared by each organisation/occupier of the Proposed Development.	**ES Volume 1, Chapter 7: Traffic and Movement**

ENVIRONMENTAL MITIGATION	ES REFERENCE
TRAFFIC AND MOVEMENT	
To support the Proposed Development, a range of on and off-site transport infrastructure measures are proposed. These will be secured by a suitably worded planning condition and include: • Sustainable Community: – Improved wayfinding on-site; – On-site NMU network; – Phase 1 enhancements (improvements identified to the existing Phase 1 infrastructure as outline in detail within the TA); – Additional on-site Voi hub locations; – On-site amenities and neighbourhoods to encourage internalisation through local living; – On-site car parking pegged to accessibility; • Access: – New access from Cartwright Avenue onto Huntingdon Road that will remove traffic from Eddington Avenue; – Numerous new NMU points of access onto Huntingdon Road adjacent to crossing points over Huntingdon Road; – Update to signals timings and phasing at existing Huntingdon Road / Eddington Avenue junction to offer additional capacity; – Two new priority-controlled accesses off Huntingdon Road, with pedestrian footways linking onto Huntingdon Road, to directly serve the northern Proposed Development employment plots; • Mobility Hubs: – High quality bus stops to be provided within 400m of homes and 800m of each other. And three onsite primary mobility hubs plus additional neighbourhood mobility hubs located throughout the Proposed Development. • Public Transport: – Uplift in existing U2, 5 & 6 service plus uplift and diversion of existing U1; • Walk and Cycle Network: – Bi-directional strategic and segregated cycle link along Cartwright Avenue; – Additional leisure active travel routes through the site; – Improvements for active travel to Storeys Field Playground / Ridgeway junction; – Improvements to Eddington Avenue / Garrod Street Crossing to incorporate cyclists; – Segregated walk and cycle infrastructure along Garrod Street linking the site to the east; – High quality cycle parking; – Provision of uni-directional cycle lanes along north-western end of Huntingdon Road to fill gap between Girton Road and A14 bridge to serve existing active travel users and new residents; – Footway provision between North-West Huntingdon Road access and A14 bridge to fill an existing active travel gap; – Improved PRoW between Huntingdon Road and Girton over A14 Active Travel bridge.	**ES Volume 1, Chapter 7: Traffic and Movement**
NOISE AND VIBRATION	
Low noise road surfaces (single layer or two-layer porous asphalt) can reduce road surface noise, by up to 5 dBA when compared with the hot rolled asphalt (a typical / standard road surface). As the design of the proposed road (Garrod Street) has not been finalised, such mitigation measures will be explored at the detailed design stage, once the layout and other requirements are confirmed. The review of Garrod Street is to be secured with an appropriately worded planning condition.	**ES Volume 1, Chapter 9: Noise and Vibration**
NOISE AND VIBRATION – SERVICES PLANT	
Building services plant will be designed to achieve the recommended limits set out in Table 9.21 of **ES Volume 1, Chapter 9: Noise and Vibration** (in accordance with BS 4142 and CCoC typical requirements), which will be secured by condition. Typical measures to be considered to ensure that the building services noise criteria are achieved include low-noise equipment, in-duct attenuators and acoustic enclosures.	**ES Volume 1, Chapter 9: Noise and Vibration**
BUILT HERITAGE	
Given the outline nature of the Proposed Development, future reserved matters applications will adhere to the core design principles set out in the Design Code. The additional mitigation that can be achieved at this stage through the detailed architectural design, use of appropriate materials palettes across the site in its entirety, together with a detailed layout that responds sensitively to the identified built heritage receptors, will deliver a high-quality townscape that responds positively to its context and will preserve the sensitivity of the nearby built heritage receptors	**ES Volume 1, Chapter 10: Built Heritage**
SOCIO-ECONOMICS	
The delivery of the Proposed Development's sports pitches, playspaces and allotments will be secured via the S106 agreement. It is anticipated that there will be restrictions on the occupation of the Proposed Development until the necessary spaces have been provided, including any relevant spaces being provided by the Phase 1 RMA for Amenity Cluster A and Amenity Cluster B.	**ES Volume 1, Chapter 6: Socio-Economics**

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