

North West Cambridge

Future Phases of Eddington

September 2025

Environmental Impact Assessment
Volume 3: Technical Appendices

North West Cambridge Masterplan

Environmental Impact Assessment Volume 3: Technical Appendices

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ANNEX 1: SCHEDULE 4 INFORMATION REQUIREMENTS – LOCATION OF INFORMATION WITHIN THE ES

	Information for Inclusion in Environmental Statements, as Specified in Schedule 4 of the EIA Regulations 2017 (as amended)	How the EIA addresses the Information Specifications
1.	A description of the development, including in particular:	
(a)	a description of the location of the development;	ES Volume 1: Chapter 1: Introduction
(b)	a description of the physical characteristics of the whole development, including, where relevant, requisite Enabling works, and the land-use requirements during the construction and operational phases;	ES Volume 1: Chapter 4: The Proposed Development Chapter 5: Enabling, Demolition and Construction
(c)	a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used.	ES Volume 1: Chapter 4: The Proposed Development
	...nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; and	ES Volume 1: Chapter 4: The Proposed Development Chapter 5: Enabling, Demolition and Construction
(d)	an estimate, by type and quantity, of expected residues and emissions (such as water, ...	ES Volume 1: Chapter 4: The Proposed Development ES Volume 3: Appendix: EIA Methodology
	...air, ...	ES Volume 1: Chapter 8: Air Quality ES Volume 3: Appendix: Air Quality
	...soil and subsoil pollution,	ES Volume 1: Chapter 12: Land Take and Soils (Agriculture) Chapter 13: Ground Conditions and Land Contamination ES Volume 3: Appendix: Land Take and Soils (Agriculture) Appendix: Ground Conditions and Land Contamination
	...noise, vibration, ...	ES Volume 1: Chapter 9: Noise and Vibration ES Volume 3: Appendix: Noise and Vibration
	...light, ...	ES Volume 1: Chapter 4: The Proposed Development ES Volume 3: Appendix: EIA Methodology
	...heat, radiation and ...	ES Volume 1: Chapter 4: The Proposed Development Chapter 9: Noise and Vibration Chapter 15: Climate Change and Greenhouse Gases ES Volume 3: Appendix: Noise and Vibration
	...quantities and types of waste produced during the construction and operation phases;	ES Volume 1: Chapter 4: The Proposed Development Chapter 5: Enabling, Demolition and Construction

	Information for Inclusion in Environmental Statements, as Specified in Schedule 4 of the EIA Regulations 2017 (as amended)	How the EIA addresses the Information Specifications
2.	A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	ES Volume 1: Chapter 3: Alternatives and Design Evolution
3.	A description of the relevant aspects of the current state of the environment (baseline scenario) ...	ES Volume 1: Chapter 1: Introduction Chapter 2: EIA Methodology Chapter 3: Alternatives and Design Evolution Technical Chapters 6 to 15 ES Volume 2: Landscape and Visual Impact Assessment
	...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.	ES Volume 1: Chapter 2: EIA Methodology Technical Chapters 6 to 15 ES Volume 2: Landscape and Visual Impact Assessment
4.	A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, ...	ES Volume 1: Chapter 6: Socio-Economics Chapter 8: Air Quality Chapter 9: Noise and Vibration ES Volume 3: Appendix: Socio-Economics Appendix: Air Quality Appendix: Noise and Vibration
	...biodiversity (for example fauna and flora), ...	ES Volume 1: Chapter 4: The Proposed Development Chapter 12: Ecology and Biodiversity ES Volume 3: Appendix: Ecology and Biodiversity
	...land (for example land take), ...	ES Volume 1: Chapter 2: EIA Methodology Chapter 12: Land Take and Soils (Agriculture) ES Volume 2: Landscape and Visual Impact Assessment ES Volume 3: Appendix: Land Take and Soils (Agriculture)
	...soil (for example organic matter, erosion, compaction, sealing), ...	ES Volume 1: Chapter 2: EIA Methodology Chapter 12: Land Take and Soils (Agriculture) ES Volume 3: Appendix: EIA Methodology Appendix: Land Take and Soils (Agriculture)
	...water (for example hydromorphological changes, quantity and quality), ...	ES Volume 1: Chapter 2: EIA Methodology Chapter 14: Water Resources, Flood Risk and Drainage ES Volume 3: Appendix: EIA Methodology Appendix: Water Resources, Flood Risk and Drainage

	Information for Inclusion in Environmental Statements, as Specified in Schedule 4 of the EIA Regulations 2017 (as amended)	How the EIA addresses the Information Specifications
	...air, ...	ES Volume 1: Chapter 8: Air Quality ES Volume 3: Appendix: Air Quality
	...climate (for example greenhouse gas emissions, impacts relevant to adaptation), ...	ES Volume 1: Chapter 4: The Proposed Development Chapter 8: Air Quality Chapter 15: Climate Change and Greenhouse Gases ES Volume 3: Appendix: Air Quality Appendix: Climate Change and Greenhouse Gases
	...material assets, cultural heritage, including architectural and archaeological aspects, and landscape...	ES Volume 1: Chapter 2: EIA Methodology Chapter 10: Built Heritage ES Volume 2: Landscape and Visual Impact Assessment ES Volume 3: Appendix: EIA Methodology
5.	A description of the likely significant effects of the development on the environment resulting from, inter alia:	
(a)	the construction and existence of the development, including, where relevant, Enabling works.	ES Volume 1: Chapter 5: Enabling Demolition, and Construction
(b)	the use of natural resources, in particular land, soil, ...	ES Volume 1: Chapter 4: The Proposed Development Chapter 5: Enabling, Demolition and Construction Chapter 11: Ecology and Biodiversity Chapter 12: Land Take and Soils (Agriculture) Chapter 13: Ground Conditions and Land Contamination
	...water and ...	ES Volume 1: Chapter 2: EIA Methodology Chapter 4: The Proposed Development Chapter 14: Water Resources, Flood Risk and Drainage ES Volume 3: Appendix: EIA Methodology
	...biodiversity, ...	ES Volume 1: Chapter 2: EIA Methodology Chapter 4: The Proposed Development Chapter 11: Ecology and Biodiversity ES Volume 3: Appendix: EIA Methodology Appendix: Ecology and Biodiversity
	...considering as far as possible the sustainable availability of these resources;	ES Volume 1: Chapter 4: The Proposed Development Chapter 5: Enabling, Demolition and Construction Technical Chapters 6 to 15
(c)	the emission of pollutants, ...	ES Volume 1: Chapter 8: Air Quality Chapter 9: Noise and Vibration Chapter 15: Climate Change and Greenhouse Gases ES Volume 3:

	Information for Inclusion in Environmental Statements, as Specified in Schedule 4 of the EIA Regulations 2017 (as amended)	How the EIA addresses the Information Specifications
		Appendix: Air Quality Appendix: Noise and Vibration Appendix: Climate Change and Greenhouse Gases
	...noise, vibration, ...	ES Volume 1: Chapter 9: Noise and Vibration ES Volume 3: Appendix: Noise and Vibration
	...light, ...	ES Volume 1: Chapter 2: EIA Methodology Chapter 4: The Proposed Development ES Volume 3: Appendix: EIA Methodology
	...heat and radiation, ...	ES Volume 1: Chapter 4: The Proposed Development Chapter 9: Noise and Vibration ES Volume 3: Appendix: Noise and Vibration
	...the creation of nuisances, ...	ES Volume 1: Chapter 7: Traffic and Transport Chapter 8: Air Quality Chapter 9: Noise and Vibration ES Volume 3: Appendix: Traffic and Transport Appendix: Air Quality Appendix: Noise and Vibration
	...and the disposal and recovery of waste;	ES Volume 1: Chapter 2: EIA Methodology Chapter 4: The Proposed Development Chapter 5: Enabling, Demolition and Construction
(d)	the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);	ES Volume 1: Chapter 2: EIA Methodology Chapter 6: Socio-Economics Chapter 7: Traffic and Transport Chapter 8: Air Quality Chapter 9: Noise and Vibration Chapter 10: Built Heritage ES Volume 2: Landscape and Visual Impact Assessment ES Volume 3: Appendix: EIA Methodology Appendix: Air Quality Appendix: Noise and Vibration Appendix: Built Heritage
(e)	the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;	ES Volume 1: Technical Chapters 6 to 15 Chapter 16: Effect Interactions ES Volume 2: Landscape and Visual Impact Assessment

	Information for Inclusion in Environmental Statements, as Specified in Schedule 4 of the EIA Regulations 2017 (as amended)	How the EIA addresses the Information Specifications
(f)	the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; and	ES Volume 1: Chapter 4: The Proposed Development Chapter 15: Climate Change and Greenhouse Gases ES Volume 3: Appendix: Climate Change and Greenhouse Gases
(g)	the technologies and the substances used.	ES Volume 1: Chapter 4: The Proposed Development Chapter 5: Enabling, Demolition and Construction Technical Chapters 6 to 15
6.	A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	ES Volume 1: Chapter 2: EIA Methodology Technical Chapters 6 to 15 ES Volume 2: Landscape and Visual Impact Assessment
7.	A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	ES Volume 1: Chapter 4: The Proposed Development Chapter 5: Enabling Works and Construction Technical Chapters 6 to 15 Chapter 18: Environmental Management, Monitoring and Mitigation Schedule ES Volume 2: Landscape and Visual Impact Assessment
8.	A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU(c) of the European Parliament and of the Council or Council Directive 2009/71/Euratom(d) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	ES Volume 3: Appendix: EIA Methodology
9.	non-technical summary of the information provided under paragraphs 1 to 8.	ES Non-Technical Summary
10.	A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	ES Volume 1: All ES chapters (In-chapter referencing) ES Volume 2: Landscape and Visual Impact Assessment ES Volume 3: Technical Appendices

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ANNEX 2: STATEMENT OF COMPETENCE

Regulation 18(5) of The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (referred to as ‘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”.

As set out in **ES Volume 1, Chapter 1: Introduction** of the ES, Trium is an environmental consultancy specialising in urban regeneration and property development projects in the United Kingdom (UK). Trium is therefore considered to be ‘competent experts’ as referenced in the EIA Regulations. In addition, and for completeness, Table 1 below sets out the company, persons and expertise of all the key technical specialists that have worked on the EIA.

Table 1 Competent Expert Experience and Expertise

Discipline	Company	Expertise
EIA Coordination	Trium	Trium is an environmental consultancy specialising in urban regeneration and property development projects in the United Kingdom (UK), with a specific focus in London. Trium’s Partners and Employees have extensive experience in managing the environmental issues and impacts surrounding large scale, high profile urban regeneration 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 500 EIAs within the commercial, retail, residential, leisure, cultural, infrastructure and industrial sectors. They have particular expertise in London based development projects. Trium’s lead EIA practitioner for this project has 20 years EIA experience of managing EIA projects within London.
Construction	T&T	T&T are a global team supports every stage of the real estate life cycle, from property condition assessments, acquisitions and development to ownership, occupation, decommissioning and asset disposal. We provide technical and environmental due diligence, reinstatement cost assessments, dilapidations and commissioning advice, and direct reviewing and testing of building systems. By integrating these capabilities within one organisation, we move rapidly from understanding and identifying issues and opportunities to devising and implementing solutions.
Socio-Economics	Quod	The socio-economic assessment has been prepared by Quod. Quod is Institute of Environmental Management and Assessment (IEMA) accredited having been awarded the EIA Quality Mark in March 2017. Several of Quod’s Socio-Economic and EIA team are also individual IEMA-accredited members.
Traffic and Movement	KMC	This assessment has been overseen and approved by Jessica Pratt. Jessica is a Director and KMC Transport Planning Ltd and has a MSc in Transport and over 18 years of experience working within the transport planning industry. Jessica has led the transport support to planning applications for a number of major developments, including the preparation of transport ES chapters and Transport Assessments. This chapter has been prepared by Nigel Pettitt. Nigel is an Associate Director at KMC Transport Planning Ltd with over 20 years of experience in highways and transportation. Nigel has MEng Civil Engineering and Management and has undertaken many Transport Assessments and prepared associated ES inputs for numerous schemes in the retail, residential and commercial sectors, including for developments similar in nature, size, and scale to the Proposed Development.”
Noise and Vibration	Trium	Trium is a consultancy with a specialism in acoustics, noise and vibration. Trium specialises in urban regeneration and property development projects in the United Kingdom (UK), with a specific focus in London. Trium have extensive experience in assessing noise and vibration issues and impacts surrounding large scale, high profile urban regeneration development projects. Trium have worked on numerous noise and vibration assessments within the commercial, retail and residential sectors. Trium’s lead for this project’s noise and vibration assessment has over 18 years’ experience working on multiple types of buildings through their life span (planning through to in-use), is a Member of the Institute of Acoustics (MIOA) and a BSc(Hon) in Acoustics.
Built Heritage	Stantec	The built heritage chapter has been prepared by Lorraine King (Heritage Planning Director) at Stantec UK Limited. Lorraine has over 15 years’ professional experience in the heritage sector, she has extensive experience in appraising the heritage significance of complex historic sites and managing positive change to heritage assets and their setting. She has an MSc in European Urban Conservation and an MSc in Urban Design. She is a full member of the Institute of Historic Building Conservation (IHBC).
Ecology and Biodiversity	Mike Dean	The Ecology and Biodiversity Chapter of the Environmental Statement for North West Cambridge has been written by Mike Dean, Director of MD Ecology Limited. Mike is a Fellow member of the Chartered Institute of Ecology and Environmental Management (CIEEM), a Chartered Ecologist and a Chartered Environmentalist. Mike has 28 years’ experience as a professional ecologist and has undertaken ecological assessments for a range of different development projects. He prepared the ecology elements of the EIA for Phase 1 of Eddington and the Site-wide Biodiversity Strategy in 2011. He has had an ongoing role with the delivery of ecological mitigation and monitoring at Eddington since the commencement of Phase 1. Mike is a former member and co-chair of CIEEM’s Professional Standards Committee and a co-author of CIEEM’s guidelines on Ecological Impact Assessment (EcIA) published in 2016 and all subsequent editions. He is also a co-author of other guidelines published by CIEEM on related topics: Preliminary Ecological Appraisal; report writing; and accessing, using and sharing biodiversity data. He is the author of a book for professional ecologists entitled Writing Effective Ecological Reports, published by Pelagic in 2021. In 2012 Mike developed a series of training courses for professional ecologists on EcIA on behalf of CIEEM and has been delivering these courses since 2013 in England and Wales; during this time he has delivered training on this topic to more than 1,000 professional ecologists and assisted CIEEM in setting up equivalent training courses in Scotland and Ireland. He is also a co-author of an article published in CIEEM’s ‘In Practice’ on an alternative approach to reporting significant effects in EIAs in 2017 and has given presentations at national conferences and webinars on Ecological Impact Assessment on behalf of the Association of Local Government Ecologists (2013 and 2017), CIEEM and the Institute of Environmental Management and Assessment (2016), and CIEEM (2016 and 2019).
Land Take and Soils	RAC	Reading Agricultural Consultants Ltd (RAC) has more than 50 years’ experience of providing advice on agricultural, environmental and countryside issues. The company is a market leader in the sector with consultants based nationwide and providing planning advice for all types of agricultural/rural development; Environmental Impact Assessments (EIAs) for agricultural developments, as well as contributing Agricultural Land Classification (ALC) surveys and farm impact assessments to EIAs for housing, minerals, infrastructure and other large scale developments; technical support in respect of soil, water and nutrients for modern rural businesses; working with insurers and loss adjusters and providing expert opinion; and undertaking research and providing advice on planning policy and land management.
Air Quality	AECOM	AECOM is an international infrastructure consulting firm, delivering professional services throughout the project lifecycle – from advisory, planning, design and engineering to program and construction management. On projects spanning transportation, buildings, water, new energy and the environment, our public and private sector clients trust us to solve their most complex challenges. AECOM has worked on numerous high profile mixed use urban regeneration and urban extension projects in the UK delivering flood risk, drainage, geoenvironmental, air quality and climate change services as part of multi-disciplinary strategic infrastructure services. This includes relevant work on the original North West Cambridge Masterplan and outline planning submission. Authors / verifiers credentials for the Environmental Statement production and relevant assessments, are listed below: - Air quality: Member of the Institution of Environmental Sciences and Air Quality Management (MIEnvSC, MIAQM), with 14 years of experience; - Ground Conditions and Land Contamination: Chartered Engineer and Geologist, Specialist in Land Condition (CEng, CGeol, SiLC), with 30 years of experience; - Water Resources, Flood Risk and Drainage: Chartered Civil Engineer (CEng), Member of if the Institution of Civil Engineers, with 20 years experience; and - Climate Change: Member of the Institute of Environmental Management and Assessment, Chartered Environmentalist (MIEMA, CEnv), with 10 years of experience.
Ground Conditions and Land Contamination		
Water Resources, Flood Risk and Drainage		
Climate Change		
Landscape and Visual Impact Assessment	Bidwells	Bidwells is a Registered Practice of the Landscape Institute and has an established Landscape and Townscape Assessment team. Martina Sechi (BSc. BE MALA CMLI), author of Volume 2 (LVIA), is the Head of the Landscape and Townscape Assessment Bidwells’ team and she is a Chartered Member of the Landscape Institute with fourteen years of professional experience. She has experience in a comprehensive range of landscape assessment projects, including Landscape and Visual Impact Assessment (LVIA), Landscape and Visual Appraisals (LVA) and Townscape Visual Impact Assessment (TVIA). She has contributed to several Environmental Impact Assessments for large-scale developments in both the rural and urban environments, including Green Belt context. She is active in the Landscape Institute as part of the committee of the East of England Branch, the Landscape Character Assessment working group and, previously, as part of the Technical Committee.

It can be confirmed that University of Cambridge (the ‘Applicant’) has ensured that the ES is prepared by competent experts. This document is therefore considered to address the requirements of Regulation 18(5) of the EIA Regulations.

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ANNEX 3: GLOSSARY OF TERMS AND ABBREVIATIONS

Accuracy	A measure of how well a set of data fits the true value.
Accurate Visual Representations	A static or moving image which shows the location of a proposed development as accurately as possible; it may also illustrate the degree to which the development will be visible, its detailed form or the proposed use of materials. AVRs are produced by accurately combining images of the proposed building with a representation of its context.
Accurate Visual Representation	Visually represents how the Proposed Development will appear in the surrounding context.
Acoustic Screening	Use of a fabric-covered, double-sided screen used in open areas such as offices to absorb noise.
ADMS Roads	Atmospheric Dispersion Modelling System Roads is a line-source Gaussian dispersion model with the capability to model 3-point sources.
Air Quality Objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air Quality Standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Ambient air	Outdoor air in the troposphere, excluding workplace air.
Ambient Noise Level	The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near ($LA_{F_{eq},T}$).
Amenity	A pleasant or advantageous aspect of the environment.
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between 2 years, which is useful for pollutants that have higher concentrations during the winter months.
Annual Probable Sunlight Hours	A measure of sunlight that a given window may expect over a year period.
Aquifer	A below ground, water-bearing layer of soil or rock.
Alluvium	Sediment laid down by a river. Can range from sands and gravels deposited by fast flowing water and clays that settle out of suspension during overbank flooding. Other deposits found on a valley floor are usually included in the term alluvium (e.g. peat).
Arisings	Material (often spoil) derived from the ground through excavation.
Asbestos	A mineral substance previously used as in insulator but, is highly toxic.
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Baseline Studies	Studies of existing environmental conditions which are designed to establish the baseline conditions against which any future changes can be measured or predicted.
Biodiversity	The diversity, or variety of plants and animals and other living things in a particular area of region. It encompasses landscape diversity, ecosystem diversity, species diversity and genetic diversity.
Borehole	A deep hole bored into the ground as part of intrusive geological investigations.

Bunding	A constructed retaining wall around storage 'where potentially polluting substances are handled, processed or stored, for the purposes of containing any unintended escape of material from that area until such time as remedial action can be taken'.
Carbon Budget	A tolerable quantity of greenhouse gas emissions that can be emitted in total over a specified time.
Carbon Dioxide (CO ₂)	Carbon dioxide is a naturally occurring gas comprising 0.04% of the atmosphere. The burning of fossil fuels releases carbon dioxide fixed by plants many millions of years ago, and this has increased its concentration in the atmosphere by some 12% over the past century. It contributes about 60 per cent of the potential global warming effect of manmade emissions of greenhouse gases.
Cast In Situ	The process of pouring liquid material into a mould or form work.
Combined Heat and Power	A low carbon technology which generates electricity whilst also capturing usable heat that is produced in the process.
Completed Development	A development scheme which has been build out.
Conservation Area	An area designated by the Local Authority as being of special architectural or historic interest under the provisions of the Planning (Listed Buildings and Conservation Areas 1990) Act, the character or appearance of which it is desirable to preserve or enhance.
Considerate Constructors Scheme	A non-profit-making, independent organisation founded in 1997 by the construction industry to improve its image.
Construction Environmental Management Plan	A documented management system with environmental procedures to monitor residual impacts of the construction phase of a development.
Construction Logistics Plan	A documented travel plan specific for a construction site.
Cumulative Schemes	Developments that have received planning permission and have a signed legal agreement in place. They are assumed to be in place by the time the Development being assessed is completed.
Decibel	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s_1 and s_2 is given by $20 \log_{10} (s_1 / s_2)$. The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is $20\mu\text{Pa}$.
Defra Air Information Resource	Webpages providing in-depth information on air quality and air pollution in the UK.
Demarcation	The action of fixing the boundary or limits of something.
Design Brief	A written document for a design project developed by a person or team in consultation with the 'client'.
Design Freeze	A method used during design development stage to mitigate the risks associated with change. This organizes and complies the design process, control changes, and force the completion of design stages on time.
Desk-Top Study	A non-intrusive study and review of all available information pertaining to a site, including historical records, collated and monitored data, and consultation with relevant stakeholders.
Directive	European Union (EU) Directives impose legal obligations on European Member States. They are binding as to the results to be achieved but, allow individual states the right to decide the form and methods used to achieve the results. An example of this is the EU Air

	Quality Framework Directive (1996) that is brought into legal effect in the UK by the Air Quality (England) Regulations (2000).	Gross External Area	A measure of floor space calculated in accordance with the Royal Institution of Chartered Surveyors (RICS) Code of Measuring Practice.
Displacement	An estimate of economic factors that may have reasonably been attained by other competitors in the absence of the development.	Gross Internal Area	A measure of the area of a building measured to the internal face of the perimeter walls at each floor level.
Dust Soiling	The accumulation of particulates that can give rise to human health effects.	Hardstanding	Ground surfaced with a hard material for parking vehicles on.
EIA Scoping	An initial stage in determining the nature and potential scale of the environmental impacts arising from a proposed development and assessing what further studies are required to establish their significance.	Heritage Asset	A building, area or scene which makes a positive contribution of special architectural, historic or environmental interest.
EIA Scoping Opinion	A written statement of the opinion of the relevant planning authority as to the information to be provided in the Environmental Statement which specifically requires a local planning authority to respond or consult with consultees within a statutory period.	Hoarding	A temporary board fence set up on the perimeter of a building site.
EIA Screening	An initial stage in which the need for EIA is considered in respect of a development. Some developments are automatically subject to EIA by means of their inevitable size, nature and effects (Schedule 1 developments). Other projects are made subject to EIA because it is anticipated that they are likely to have significant environmental effects (Schedule 2 developments).	Hydrogeology	The study of geological factors relating to the Earth's water.
Emission	A material that is expelled or released to the environment. Usually applied to gaseous or odorous discharges to the atmosphere.	Indices of Multiple Deprivation	A UK government qualitative study of deprived areas in English local councils.
Environmental Impact Assessment	A process by which information about the environmental effects of a development is collected and taken into account by the relevant decision-making body before a decision is given on whether the development should go ahead.	In-situ	In the natural, original or appropriate position.
Environmental Statement	A statement that includes such information that is reasonably required to assess the environmental effects of a development.	Intrusive Investigation	An in-depth investigation involving further sampling and analysis, such as the gathering of samples from the ground, walls, ceilings for the detection of contamination, asbestos and or archaeological remains.
Exceedance	A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard.	L _A Feq,T	The A-weighted noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
Façade	The front or face of a building.	L _A Fmax,T	The A-weighted noise level index defined as the maximum noise level during the period T. L _{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
Fit-out	Installation of all non-substructure and non-superstructure items such as electrical water services, as well as final internal finishings.	L _A 90	The noise level exceeded for 90% of the measurement period A-weighted and calculated by Statistical Analysis.
Floodplain	Land adjacent to a watercourse over which water flows, or would flow but for defences in place, in times of flood.	Lawson Comfort Criteria	The so called 'Lawson' criteria which define whether a space is comfortable for business walking, strolling or sitting by a threshold wind speed i.e. the hourly mean wind speed exceeded 5% of the time.
Flood Resistance and Resilience	Measures put in place to protect a property against flooding.	Lawson Safety Criteria	Criteria for the safety of an individual in relation to the wind environment. There are two categories: S1: unsafe for typical use (threshold speed 20m/s) and S2: unsafe for sensitive use (threshold speed 15m/s).
Fugitive emissions	Emissions arising from the passage of vehicles that do not arise from the exhaust system.	Light Trespass	The spilling of light beyond the boundary of the area to be lit.
Geotechnical	Ground investigation, typically in the form of boreholes and/or trial/test pits, carried out for engineering purposes to determine the nature of the subsurface deposits.	Listed Building	A building or structure of special architectural or historic interest which is included in a list made by the Secretary of State.
Glare	The uncomfortable brightness of a light source or illuminated area when viewed against a dark background.	Made Ground	Soils or other material which has been deposited by man rather than natural processes, for example to make up ground levels.
Grade I Listed Building	A listed building that is of exceptional interest.	Magnitude of Impact	The degree and extent to which the project changes the environment.
Grade II Listed Building	A listed building that is of special interest.	Massing	Massing refers to the structure in three dimensions, usually outlining the height and size of a building.
Grade II* Listed Building	A listed building that is of particular importance and of more than special interest.	Mechanical Ventilation Heat Recovery	An energy recovery ventilation system using equipment known as a heat recovery ventilator, heat exchanger, air exchanger, or air-to-air heat exchanger which employs a cross flow or counter-flow heat exchanger (counter current heat exchange) between the inbound and outbound air flow. The system provides fresh air and improved climate control, while also saving energy by reducing heating (and cooling) requirements.

Microclimate	The climate of a very small or restricted area, particularly when this is different from the climate of the surrounding area.
Mitigation	Any process, activity of thing designed to avoid, reduce or remedy adverse environmental impacts likely to be caused by a development project.
Mitigation Measure	Measure aiming at reducing an adverse environmental effect.
National Planning Policy Framework	Came into force on 27 March 2012. It sets out the Government's economic, environmental and social planning policies for England and summarises, in a single document, all previous national planning policy advice (Planning Policy Statements and Planning Policy Guidance notes).
Nitrogen Dioxide	Road transport and the burning of fossil fuels for power are the main sources of Nitrogen dioxide. In addition to being a greenhouse gas it also contributes to photochemical smog formation. It is an irritant to the respiratory system.
Non-Technical Summary	A summary of the Environmental Statement in 'non-technical language'.
No-sky Line	A measure of the distribution of diffuse daylight within a room.
Obtrusive Light	Any light emitted from artificial sources into spaces where this light would be unwanted.
Open Space	Includes all open spaces, plus other spaces that provide a break from the densely built-up urban form, such as pedestrianised areas and station concourses; hard-landscaped areas with private access; pedestrian/cycle and wildlife routes; and all the green infrastructure that links open spaces together, including green corridors, private residential gardens, trees, green roofs, and green landscaped areas.
Ordnance Datum	Land levels are measured relative to the average sea level at Newlyn, Cornwall. This average level is referred to as 'Ordnance Datum'.
Oversailing	Something (part of a project) being above or beyond something else (a lower part).
Overshadowing	Overshadowing occurs when a structure blocks out sunlight from neighbouring properties mainly on the northern side of that structure. It can affect the amount of daylight let into neighbouring properties when the shadow cast falls across windows or glazed doors, or on amenity spaces.
Particulate Matter	Discrete particles in ambient air, sizes ranging between nanometres (nm, billionths of a metre) to tens of micrometres (µm, millionths of a metre).
Party Wall	A wall common to two adjoining buildings or rooms.
Party Wall Act (1996)	A framework for preventing or resolving disputes in relation to party walls, part structures, boundary walls and excavations near neighbouring buildings.
Pathways	The routes by which impacts are transmitted through air, water, soils or plants and organisms to their receptors.
Pedestrian Level Wind Speed	Mean or gust wind speed measured at 1.5 m above ground level.
Pedestrian Environment Review System (PERS)	Pedestrian Environment Review System (PERS) is a walking audit tool developed by TfL for assessing the level of service and quality provided for pedestrians to across a range of pedestrian environments.
Percentile	The percentage of results below a given value.
Photomontage	The use of photographs of a site from a certain viewpoint to show both the current base (pre-development) state of the site and the anticipated view of the site once development is complete.
Pile	A timber, steel or concrete post which is driven, jacked or cast (bored) into the ground to carry vertical or horizontal loads.

Pile Cap	A thick, concrete mat that rests on concrete or timber piles that have been driven into the ground.
Plant	A building's generator, heating, ventilation, and/or electricity-production system.
Planning Application Red Line Boundary	Border that incorporates all land necessary to carry out the proposed development.
Planning Inspectorate	An executive agency of the Department for Communities and Local Government with responsibility of determining final outcomes of town planning and enforcement appeals and public examination of local development plans.
Planning Practice Guidance	A web-based resource that came into force in 2014. It seeks to consolidate existing technical guidance into a consolidated online format and provides further detail on the policies contained within the NPPF.
Planning Statement	Sets out the policy background to the proposal, describes the site and its surroundings, identifies constraints and explores the planning policy framework.
Porous	A rock or material having minute holes through which liquid or air can pass.
Proposed Development	An area of land that has had a potential scheme put forward to be built on.
Public Transport Accessibility Level Assessment	A means of quantifying and comparing accessibility by public transport for a given site.
Public Realm	The space between and within buildings that are publicly accessible, including streets, squares, forecourts, parks and open spaces.
Ratification (Monitoring)	Involves a critical review of all information relating to a data set, in order to amend or reject the data. When the data have been ratified they represent the final data to be used (see also validation).
Receptor (Sensitive)	A component of the natural, created, or built environment such as human being, water, air, a building, or a plant that is affected by an impact.
Residual Effects	Those effects of a development following implementation of any relevant mitigation proposals.
Risk Assessment	An assessment of the likelihood and severity of an occurrence.
Safeguarding	Protecting from harm or damage with an appropriate measure.
Screening (landscaping)	A natural or man-made feature which separates land uses.
Secure by Design standards	Initiative combining the principles of 'designing out crime' with physical security.
Sensitive Area	According to EIA Regulations is any of the following: land notified under section 28(1) (Sites of Special Scientific Interest) of the Wildlife and Countryside Act 1981 (23); a National Park; the Broads; a property on the World Heritage List; a scheduled monument; AONB or a European site.
Setting	The context in which a building or area can be appreciated.
Severance	The perceived divisions that can occur within a community when it becomes separated by a traffic route.
Site of Importance for Nature Conservation	A non-statutory site identified as being areas of importance for wildlife and geology.

Site Suitability Assessment	A comprehensive analysis of both the on-site subsoil characteristics and the local hydrogeological features of the site to determine the most feasible means of treating effluent on-site whilst ensuring full compliance with wastewater treatment requirements.
Socio-Economics	The social science that studies how economic activity affects and is shaped by social processes.
Solar Glare	A continuous source of excessive brightness from the sun.
Sound Power Level	The total sound power emitted by a source in all directions in watts (joules per second).
Specific Noise Level	The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source (the noise source under investigation) over a given time interval (LAeq,T)
Statement of Community Involvement	Produced by local authorities to explain to the public, their involvement in the preparation of local planning documents.
Statutory Consultees	Groups or bodies that, by law, must be consulted as part of the planning application process for EIA development.
Strata	Layer of rock or soil.
Substructure	Elements of a development below ground level, typically basements and foundations.
Superstructure	Elements of a development above ground principally the mega frame, supporting northern core and outer shell cladding.
Supplementary Planning Document	Documents which seek to give guidance and support on the Council's planning processes and are one of the material considerations in determining planning applications.
Surface Water Drainage Strategy	A report into how surface water, usually caused by rain, affects a site and the surrounding area.
The Applicant	The persons or entities making the planning application.
The site	The extent of the development site, as defined by the red-line boundary plan.
Time slicing	A technique to implement multitasking in operating systems.
Topography	The natural and man-made features of an area collectively.
Townscape	The visual appearance of a town or urban area.
Transport Assessment	Prepared and submitted alongside planning applications for developments likely to have significant transport implications.
Travel Plan	A document which puts measures in place that will encourage sustainable travel and reduce reliance on single occupancy cars.
TRICS	A database of trip rates for developments used in the UK.
Uncertainty	A measure, associated with the result of a measurement, which characterizes the range of values within which the true value is expected to lie. Uncertainty is usually expressed as the range within which the true value is expected to lie with a 95% probability, where standard statistical and other procedures have been used to evaluate this figure. Uncertainty is more clearly defined than the closely related parameter 'accuracy', and has replaced it on recent European legislation.
Unexploded Ordnance	Explosive weapons which did not explode when they were deployed and still pose a risk of detonation, sometimes many decades after they were used or discarded.
Urban Grain	The combined pattern of blocks and streets, taking into account the character of street blocks and building height and size and how they work together to enable movement and access.
Urban Heat Island Effect	An urban area or metropolitan area that is significantly warmer than its surrounding rural areas due to human activities.

Validation (modelling)	Refers to the general comparison of modelled results against monitoring data carried out by model developers.
Validation (monitoring)	Screening monitoring data by visual examination to check for spurious and unusual measurements (see also ratification).
Verification (modelling)	Comparison of modelled results versus any local monitoring data at relevant locations.
Verified Image	An outline image of a development on a base photograph to provide projections of key views.
Vertical Sky Component	A 'spot' measure of the skylight reaching the mid-point of a window from an overcast sky. It represents the amount of visible sky that can be seen from that reference point, from over and around an obstruction in front of the window.
Waste Arisings	Materials forming the secondary or waste products of industrial operations.
Watching Brief (archaeological)	An archaeological watching brief is 'a formal programme of observation and investigation conducted during any operation carried out for non–archaeological reasons.'
Wireline	A single line representing the outline of the building.

ABBREVIATIONS

μgm^{-3}	A measure of concentration in terms of mass per unit volume. A concentration of $1\mu\text{g}/\text{m}^3$ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.
Micrograms per cubic metre	
μm	Micrometres
AADT	Annual Average Daytime Traffic Flows
AAWT	Annual Average Weekly Traffic Flows
AD	Anno Domini
ADF	Average Daylight Factor
ADMS	Atmospheric Dispersion Modelling System
ADO	Approved Document O (of UK Government Building Regulations, 2010)
AHMM	Allford Hall Monaghan Morris (Architects)
AI	Accessibility Index
ALC	Agricultural Land Classification
AMCT	Annual Mean Concentration Target
ANC	Association of Noise Consultants
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
APA	Archaeological Priority Area
APSH	Annual Probable Sunlight Hours
AQ	Air Quality
AQAL	Air Quality Assessment Level
AQAP	Air Quality Action Plan
AQFA	Air Quality Focus Area
AQG	Air Quality Guidelines
AQMA	Air Quality Management Area
AQO	Air Quality Objectives
AQS	Air Quality Standards
ASHP	Air Source Heat Pumps
ATC	Automatic Traffic Counters
ATMs	Air Traffic Management systems
AURN	Automatic Urban and Rural Network
AVO	Associate of Noise Consultants Acoustics Ventilation and Overheating Residential Design Guide
AVRs	Accurate Visual Representations
B	Beaufort
BAP	Biodiversity Action Plan
BC	Before Christ
BEB	Building Emissions Benchmark

BEIS	Business, Energy and Industrial Strategy (UK Government Department for)
bgl	Below Ground Level
BGS	British Geological Survey
BIA	Basement Impact Assessment
BMU	Building Maintenance Unit
BMV	Best and Most Versatile Land
BNG	Biodiversity Net Gain
BPM	Best Practicable Means
BRE	Building Research Establishment
BRES	Business Register and Employment Survey
BREEAM	British Research Establishment Environmental Assessment Method
BS	British Standard
BSI	British Standard Institute
BST	British Standard Time
CA	Conservation Area
CAA	Civil Aviation Authority
CAAP	Clean Air Action Plan
CAD	Computer-Aided Design
CaRT	Canals and Rivers Trust
CCC	Cambridge City Council
CCoC	Cambridgeshire County Council
CCTV	Closed-circuit Television
CDA	Critical Drainage Area
CDM	Construction Design and Management
CDP	Community Development Panel
CEMP	Construction Environmental Management Plan
CERS	Cycle Environment Review System
CFA	Continuous Flight Auger: A piling method.
CFD	Computational Fluid Dynamics
CHP	Combined Heating and Power
CIE	Commission Internationale L'Eclairage (International Commission on Illumination)
CIEEM	Chartered Institute for Ecology and Environmental Management
CIfA	Chartered Institute for Archaeologists
CIL	Community Infrastructure Levy
CITB	Construction Industry Training Board
CLe	Critical Levels
Clo	Critical Loads
CLOCS	Construction Logistics and Cycle Safety

CLP	Construction Logistics Plan	EIA	Environmental Impact Assessment
CMS	Construction Method Statement	EPA	Environmental Protection Act
CO	Carbon monoxide	EPUK	Environmental Protection UK
CO ₂	Carbon dioxide	ETS	Emissions Trading Scheme
CoCP	Code of Construction Practice	ES	Environmental Statement
CoP	Code of Practice	Ev	Vertical Illuminance In Lux
CoPA	Control of Pollution Act	FEA	Finite Element Analysis
COSHH	Control of Substances Hazardous to Health	FFL	Finished Floor Level
CPG	Camden Planning Guidance	FM	Facilities Management
CPZ	Controlled Parking Zone	FRA	Flood Risk Assessment
CRTN	Calculation of Road Traffic Noise	FTE	Full Time Equivalent
CSA	Childcare Sufficiency Assessment	FTP	Framework Travel Plan
CTMP	Construction Traffic Management Plan	FW Drainage	Foul Water Drainage
DAS	Design and Access Statement	GDP	Gross Domestic Product
dB	Decibel	GEA	Gross External Area
DBA	Desk Based Assessment	Geoarch	Geoarchaeological Deposit Model
DCLG	Department for Communities and Local Government	GHG	Greenhouse Gas
DECC	Department of Energy and Climate Change	GIA	Gross Internal Area
DEFRA	Department of Environment, Food and Rural Affairs	GLVIA	Guidelines for Landscape and Visual Impact Assessment
DfE	Department for Education	GMT	Greenwich Mean Time
DfT	Department for Transport	GP	General Practitioner
DLR	Docklands Light Railway	GWP	Global Warming Potential
DMP	Dust Management Plan	Ha	Hectare
DMPO	Development Management Procedure	HE	Historic England
DMR	Discounted Market Rent	HGV	Heavy Goods Vehicle
DMRB	Design Manual for Roads and Bridges	HMSO	His Majesty's Stationery Office
DoE	Department of Education	HSE	Health and Safety Executive
DPD	Detailed Sites Policies	HUDU	Healthy Urban Development Unit
DRA	Dust Risk Assessment	IAQM	Institute of Air Quality Management
DRP	Design Review Panel	IANL	Internal Ambient Noise Levels
DS	Drainage Strategy	IAS	International Aviation and Shipping
DSOSG	Daylight, Sunlight, Overshadowing and Solar Glare	ICB	Integrated Care Board (ICB)
DSP	Delivery Servicing Plan	ICE	Inventory of Carbon and Energy
EA	Environment Agency	IDP	Infrastructure Delivery Plan
EC	European Commission	IEMA	Institute of Environmental Management and Assessment
EFT	Emissions Factor Toolkit	IFC	International Finance Corporation
EHO	Environmental Health Officer	IMD	Index of Multiple Deprivation
EHV	Extra High Voltage Lines	IOA	Institute of Acoustics

IPCC	International Panel on Climate Change
JAQU	Joint Air Quality Unit
Kg	Kilograms
km	Kilometres
kWh	Kilowatt hour
IoD	Indices of Deprivation
l/s	Litres per second
LAEI	London Atmospheric Emissions Inventory
LAP	Local Area Partnership
LAQM	Local Air Quality Management
LAQM.TG	Local Air Quality Management Technical Guidance
LCN	Local Cycle Network
LCRM	Land Contamination Risk Management
LEAP	Locally Equipped Areas for Play
LED	Light Emitting Diode
LEZ	Low Emissions Zone
LGV	Light Goods Vehicles
LHNA	Local Housing Needs Assessment
LKD	Living Kitchen Diner
LLFA	Lead Local Flood Authority
LLSOAs	Lower Layer Super Output Areas
LNR	Local Nature Reserve
LOAEL	Lowest Observed Adverse Effect Level
LPA	Local Planning Authority
LVIA	Landscape and Visual Impact Assessment
LWA	The mean A-weighted sound power level
LWS	Local Wildlife Sites
m	Metre
m ²	Square metre
m ³	Cubic metre
mAOD	Metres Above Ordnance Datum
MDR	Mixed Dry Recycling
MEP	Mechanical, Electrical and Plumbing
MHWS	Mean High Water Springs
MMO	Marine Management Organisation
mm/s	Millimetres per second
m/s	Meters per Second
MSCP	Multi-storey Car Park

MTS	Mayor's Transport Strategy
MUGA	Multi-use games area
MVHR	Mechanical Ventilation and Heat Recovery
NAQO	National Air Quality Objectives
N/A	Not applicable
NAEI	National Atmospheric Emission Inventory
NCN	National Cycle Network
NEAP	Neighbourhood Equipped Areas of Play
NGET	National Grid Electrical Transmission
NGR	National Grid Reference
NHBC	National House Builders Council
NHS	National Health Service
NIA	Net Internal Area
NIP	National Infrastructure Planning
NMR	National Monuments Record
NMVOC	Non-Methane Volatile Organic Compounds
NO	Nitrogen monoxide, a.k.a. nitric oxide
NO ₂	Nitrogen Dioxide
NOx	Nitrogen Oxides
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
NPSE	Noise Policy Statement for England
NRMM	Non-Road Mobile Machinery
NSL	No-Sky Line
NTS	Non-Technical Summary
NVZ	Nitrate Vulnerability Zone
OA	Opportunity Area
O ₃	Ozone
OD	Ordnance Datum
OHID	Office for Health Improvement and Disparities
ONS	Office of National Statistics
OPA	Outline Planning Application
OS	Ordnance Survey
PAHs	Polycyclic Aromatic Hydrocarbons
PAN	Public Admission Numbers
PCBs	Polychlorinated Biphenyls
PCC	Portland Cement Concrete
PE	Polyethylene

PEA	Preliminary Ecological Appraisal	SOC	Standard Occupational Classification
PERS	Pedestrian Environment Review System	SoS	Secretary of State
PERT	Population Exposure Reduction Target	SO ₂	Sulphur Dioxide
PFRA	Preliminary Flood Risk Assessment	SOAEL	Significant Adverse Effect Level
PIA	Personal Injury Accident	SPA	Special Protection Areas
PM ^{2.5} /PM ¹⁰	Particulate Material of a particular size fraction	SPD	Supplementary Planning Documents
PNC	Primary Care Networks	SPG	Supplementary Planning Guidance
ppb	Parts per billion. The concentration of a pollutant in the air in terms of volume ratio. A concentration of 1 ppb means that for every billion (10 ⁹) units of air, there is one unit of pollutant present.	SPL	Sound Power Level
PPE	Personal Protective Equipment	SPZ	(Groundwater) Source Protection Zone
PPG	Planning Practice Guidance	SSSI	Site of Special Scientific Interest
PPG	Pollution Prevention Guidelines	SuDS	Sustainable Urban Drainage Systems
ppm	Parts per million. The concentration of a pollutant in the air in terms of volume ratio. A concentration of 1 ppm means that for every billion (10 ⁶) units of air, there is one unit of pollutant present.	SW Drainage	Surface Water Drainage
PPV	Peak Particle Velocity	TA	Transport Assessment
PRA	Preliminary Risk Assessment	TAG	Transport Analysis Guidance
ProPG	Professional Practice Guidance on Planning & Noise	TC	Tower Crane
PRTR	Pollutant Release and Transfer Register	TEB	Transport Emissions Benchmark
PSH	Probable Sunlight Hours	TEMPro	Trip End Model Presentation Program
PTAL	Public Transport Accessibility Level	TOC	Take Off and Climb Surface
PT	Post-tensioned	TP	Travel Plan
PV	Photovoltaic	TPH	Total Petroleum Hydrocarbons
PVC	Polyvinyl Chloride	TRL	Transport Research Laboratory
QRP	Quality Review Panel	TTE	Total Transport Emissions
RANS	Reynolds Averaged Navier-Stokes	UoC	University of Cambridge
RC	Reinforced Concrete	UGF	Urban Greening Factor
RFRA	Regional Flood Risk Assessment	UK	United Kingdom
RMA	Reserved Matters Application	UKAS	United Kingdom Accreditation Service
RICS	Royal Institute of Chartered Surveyors	UKCP	United Kingdom Climate Projections
SAC	Special Areas of Conservation	UKHSA	UK Health Security Agency
SCDC	South Cambridgeshire District Council	UKNA	UK National Annex
SCI	Statement of Community Involvement	ULEZ	Ultra-Low Emissions Zone
SDA	Spatial Daylight Autonomy	USA	Updating and Screening Assessment
SHLAA	Strategic Housing Land Availability Assessment	UXO	Unexploded Ordnance
SHOG	Sun Hours on Ground	VDV	Vibration Dose Values
SFRA	Strategic Flood Risk Assessment	VOA	Valuation Office Agency
SINC	Site of Importance for Nature Conservation	VOC/SVOCs	Volatile Organic Compounds
		VSC	Vertical Sky Component
		WFD	Water Framework Directive
		WHO	World Health Organization

WHS	World Heritage Site
WPSH	Winter Probable Sunlight Hours
WSHP	Water Source Heat Pumps
WSI	Written Scheme of Investigation

Appendix: EIA Methodology

Annex 1: EIA Scoping Report

Annex 2: EIA Scoping Opinion

Annex 3: Cumulative Schemes List and Map

Appendix: EIA Methodology

Annex 1: EIA Scoping Report

Annex 2: EIA Scoping Opinion

Annex 3: Cumulative Schemes List and Map



North West Cambridge Development EIA Scoping Opinion Request Report

Prepared for:
University of Cambridge

Date:
November 2024

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INTRODUCTION

- 1 The University of Cambridge (hereinafter referred to as 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 131.5 hectares (ha) and is located across the administrative boundary of South Cambridgeshire District Council (SCDC) and Cambridge City Council (CCC) which are therefore the Local Planning Authorities (LPA) for the site. The Greater Cambridge Shared Planning (GCSP) Service manages planning services on behalf of SCDC and CCC.
- 2 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.
- 3 The scheme proposals (hereafter referred to as 'the Proposed Development') comprise demolition of a number of existing buildings and the phased construction of a residential-led mixed-use development. The Proposed Development will comprise up to 4,200 new residential units, student accommodation, co-living and senior living accommodation, and a mix of non-residential uses, likely to include: commercial, retail, food and beverage nursery, and health floorspace, with associated servicing facilities, parking, plant space, open space and landscaping. The existing highways network will also be reconfigured, including realignments and junction improvements. Further details of the Proposed Development are provided in the '*Planning Application and Proposed Development*' section of this Scoping Report.
- 4 The site forms part of the wider North West Cambridge Development Masterplan redevelopment consented in 2013 (Planning References: 11/1114/OUT / S/1886/11), referred to herein as the '2013 Outline Planning Permission (OPP)', as discussed further in the '*Planning Context and History*' section of this EIA Scoping Opinion Request Report (hereafter referred to as the 'EIA Scoping Report'). 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 (subject to the planning permission, as granted under Planning References: 11/1114/OUT / S/1886/11). The whole of the North West Cambridge Development Masterplan site is hereinafter referred to as the 'OPP site', while the redline boundary for the planning application excludes certain areas within this wider OPP site.
- 5 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 intends to submit a new outline planning application for the development of the remainder of the OPP site as well as some potential alterations to some existing Phase 1 plots. The planning application will be submitted in outline, reserving all matters for later approval, with the exception of primary access, which will be submitted in detail along with any change of use to the existing buildings that is required.
- 6 Figure 1 provides an indicative site location plan and Figure 2 presents an indicative planning application boundary.
- 7 Given the nature of the development described, the Proposed Development falls within the classification of Schedule 2, 10(b) (Infrastructure Projects – Urban Development Projects) of the Environmental

Impact Assessment (EIA) Regulations (as amended)¹. Taking into account the scale of the development and the nature of the site and surrounding area, it is considered that there is the potential for significant environmental effects to arise. The Proposed Development is therefore considered to constitute 'EIA development' under the EIA Regulations, and so an Environmental Statement (ES) will be prepared to accompany the future outline planning application.

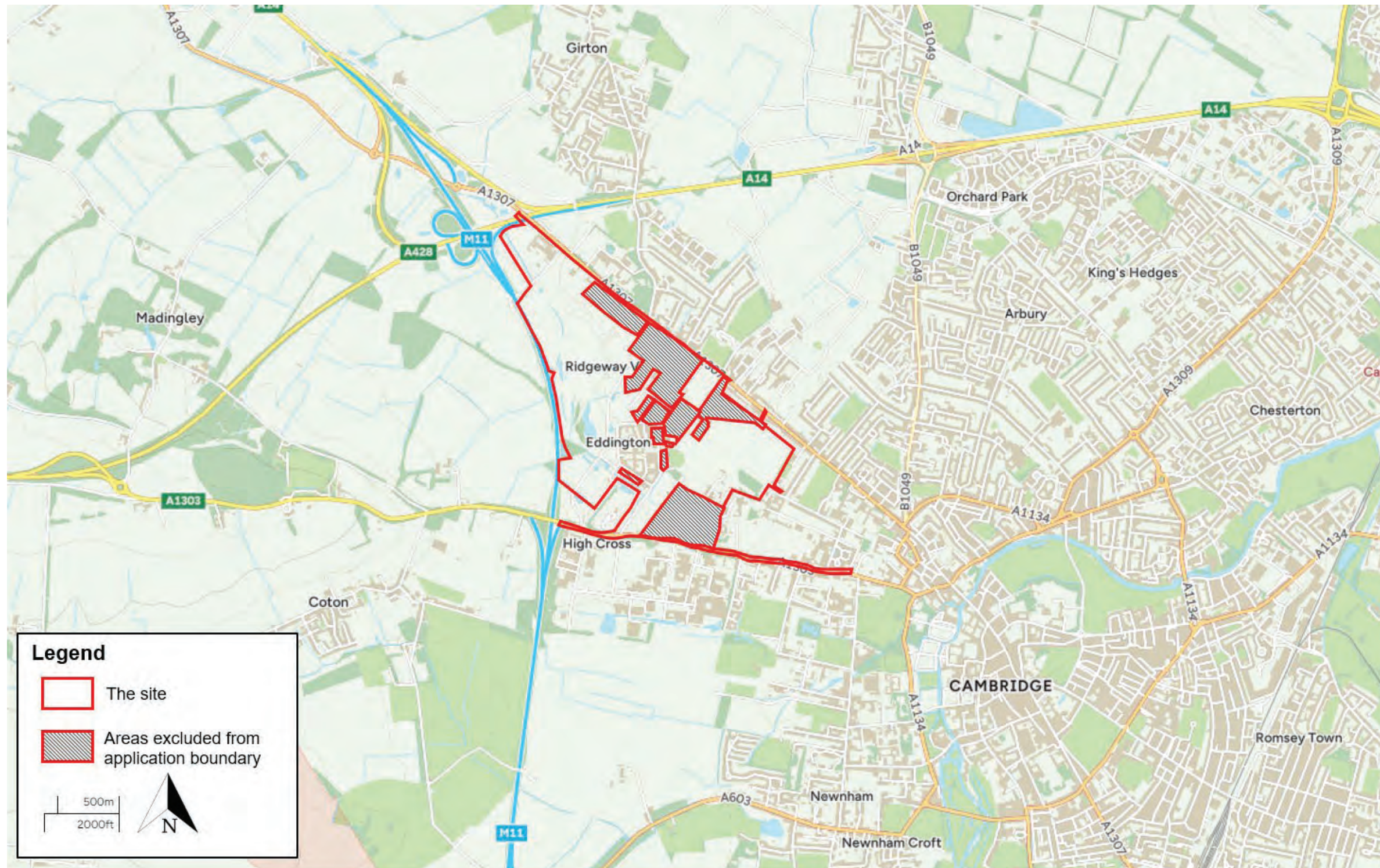
- 8 Trium Environmental Consulting LLP (Trium) has been appointed by the Applicant to undertake the EIA Scoping exercise. This EIA Scoping Report is submitted to the GCSP to seek an EIA Scoping Opinion in accordance with Regulation 15 of the EIA Regulations. This process is carried out to agree the approach and scope of the EIA and will be reported in the ES, which is to be submitted in support of the future outline planning application.

STRUCTURE OF THE SCOPING REPORT

- 9 This EIA Scoping Report is structured as follows and provides:
- A description of the site's planning context and history;
 - A description of the location and existing uses of the site;
 - A description of the site and surrounding area's environmental context;
 - An overview of the planning application and Proposed Development;
 - Scope of the EIA including the proposed EIA Methodology;
 - A summary of the environmental topics that are considered to potentially result in significant effects on the environment and those that are considered unlikely to result in significant effects on the environment; and
 - The proposed structure of the ES and a Request of a formal scoping opinion from GCSP.
- 10 This EIA Scoping Report is supported by the following Annexes:
- **Annex A:** Approach to EIA Scoping and EIA Methodology (this annex provides an overview of the scoping process against relevant legislation, policy and guidance and the proposed methodology and approach to the Environmental Impact Assessment forming the Environmental Statement);
 - **Annex B:** Planning Policy Context (an overview of the relevant legislation, policy and guidance relevant to the Environmental Impact Assessment);
 - **Annex C:** Cumulative Schemes (schemes that have been identified to have the potential to cause significant cumulative effects alongside the Proposed Development);
 - **Annex D:** Topic Sheets (Scoped In) for the topics that are considered to potentially result in significant effects on the environment. The topic sheets include an explanation of the proposed scope and assessment methodology that will be adopted to predict the magnitude of potential impacts and the resultant scale, nature, geographic extent and duration of potential effects, and the effect significance;
 - **Annex E:** Topic Sheets (Scoped Out) for the topics that are considered unlikely to result in significant effects on the environment with supporting evidence / justification;
 - **Annex F:** Ecology Consultation;
 - **Annex G:** Landscape and Visual Baseline Report;
 - **Annex H:** Written Scheme of Investigation; and
 - **Annex I:** North West Cambridge Archaeology Report.

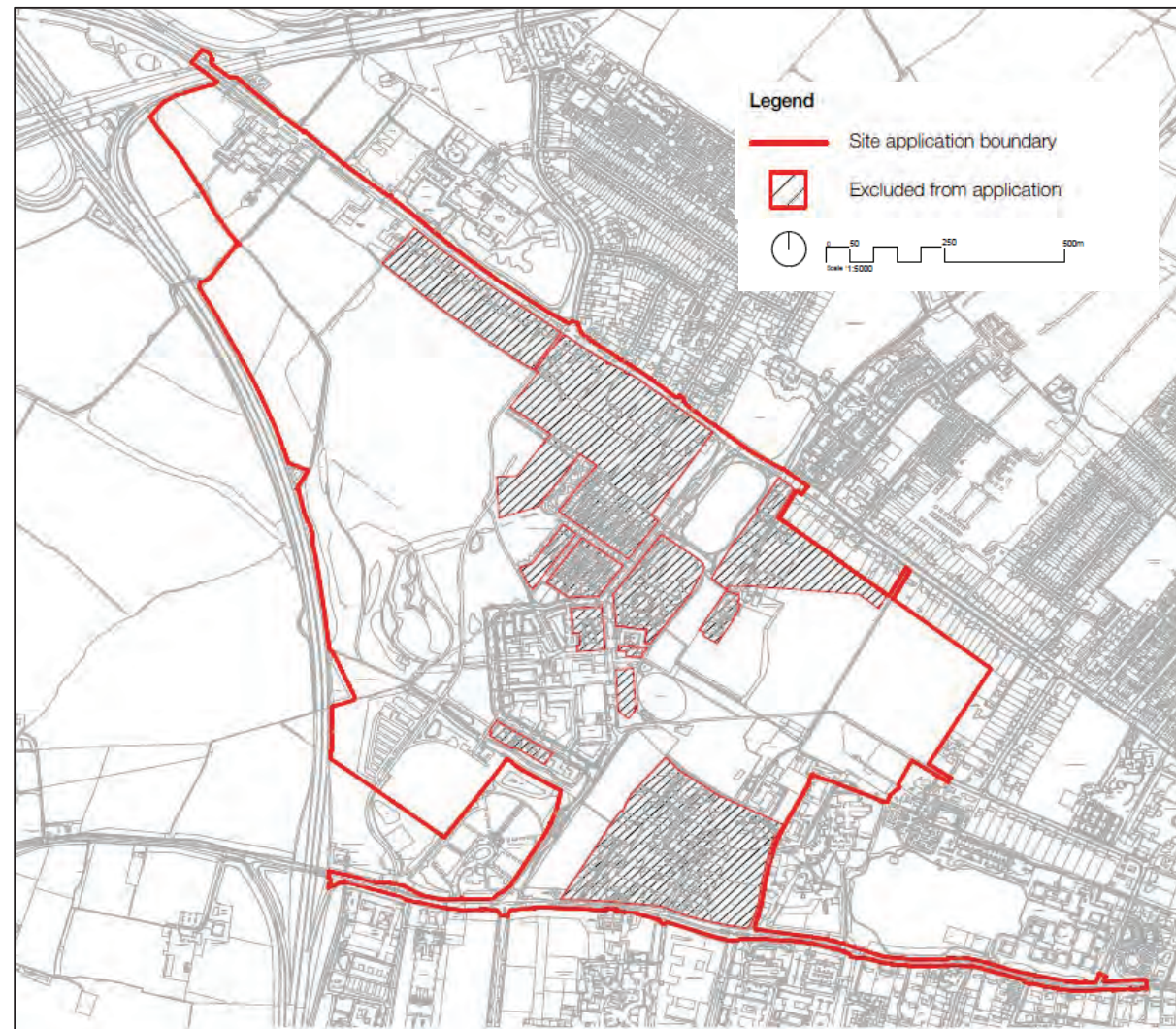
¹ Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended)

Figure 1 Indicative Site Location Plan²



² Note: Indicative site boundary shown

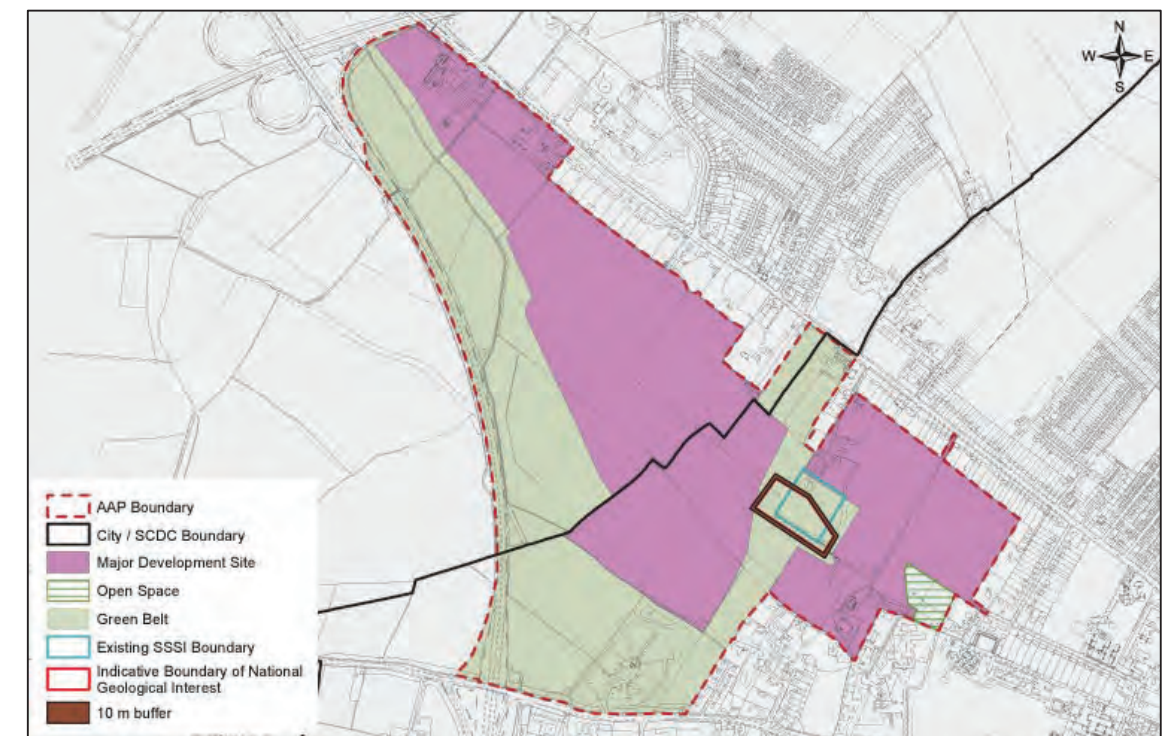
Figure 2 Indicative Redline Planning Application Boundary



PLANNING CONTEXT AND HISTORY

- 11 The OPP site is designated as a Major Development site within the Cambridge Local Plan (2018)³ and South Cambridgeshire Local Plan⁴ (2018), and allocated within the North West Cambridge Area Action Plan (2009)⁵. The site allocation is shown in Figure 3.
- 12 The OPP 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.

Figure 3 North West Cambridge Area Action Plan Site Allocation⁵



³ Cambridge City Council (2018); Cambridge Local Plan

⁴ South Cambridgeshire District Council (2018); South Cambridgeshire Local Plan

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

Outline Planning Permission 2013

- 13** 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 adaptations to Madingley Rd and Huntingdon Rd), pedestrian, cycle and vehicle routes, parking, drainage, open spaces and earthworks."

- 14** This application was accompanied by an ES dated 2012 (herein referred to as the '2012 ES'). Further details of the 2012 ES are outlined below.
- 15** 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.
- 16** 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.
- 17** 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.
- 18** 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

- 19** The 2013 OPP was accompanied by the 2012 ES. It is noted the 2012 ES was prepared under a previous iteration of the EIA Regulations⁶. 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;

⁶ The Town and Country Planning (Environmental Impact Assessment) Regulations 2011

- Noise Environment;
 - Air Quality;
 - Hydrology, Drainage and Flood Risk; and
 - Utilities and Services.
- 20** 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**
- 21** 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.
- 22** 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 approximately 430 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).
- 23** The time limit for submission of RMAs for residential development under the 2013 OPP has now expired (as of February 2023) and therefore a new planning permission is required to enable any further housing to come forward across the OPP site.
- 24** The Illustrative Masterplan as included within the 2013 OPP illustrating the Phase 1 plots is shown in Figure 4. Table 1 summarises the current status of the respective Phase 1 plots of the 2013 OPP.
- 25** Table 1 sets out which plots are excluded from the forthcoming planning application boundary of the site and which are proposed to be included.
- 26** Although Lots 1, 2, 3, 5 and 8 of Phase 1 are complete and operational, it is proposed that they are included within the site because alterations to the operation of the units within these plots may be proposed as part of the Proposed Development (as detailed within the 'Planning Application and Proposed Development' section of this EIA Scoping Report). However, as the development on these plots is complete and the changes proposed will not involve any physical development, these plots will be considered as part of the baseline scenario within the ES for the majority of ES topics and the proposed alterations will be assessed within the ES where relevant.

Figure 4 The OPP 2013 Illustrative Masterplan – Phase 1 Plots⁷



Table 1 Current Status of Phase 1 of the 2013 OPP

Plot	Planning Reference	Approved	Description	Current Status
Lot 1	13/1748/REM and 15/1553/S73	Approved November 2015	117 Key Worker Homes; 2,000m² foodstore (Sainsbury's); 700m² primary healthcare centre; 200m² police office; and - Energy centre.	Complete and operational.
Lot 2	14/1722/REM	Approved January 2015	264 Key Worker Homes; 1,963m² local shops; and - Flexible social space / ancillary office.	Complete and operational.
Lot 3	13/1827/REM	Approved March 2014	232 Key Worker Homes; - Flexible community space; and - Car parking courts.	Complete and operational.
Lot 4	22/01168/REM	Approved June 2022	88 market housing units.	Under construction.

⁷ Phase 1 plots are denoted by the blue shaded areas (included within the planning application redline boundary) and grey shaded areas (excluded within the planning application redline boundary).

Plot	Planning Reference	Approved	Description	Current Status
Lot 5	13/1440/REM and S/2044/13/RM	Approved December 2013	325 student accommodation units.	Complete and operational.
Lot 6	14/0626/REM	Approved July 2014	3 Form Entry Primary School	Complete and operational.
Lot 7	13/1828/REM	Approved March 2014	716m² community centre; and 994m² nursery (100 places).	Complete and operational.
Lot 8	14/0109/REM	Approved April 2014	73 Key Worker Homes.	Complete and operational.
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.	Complete and operational.
M2				Complete and operational.
M3	17/0285/REM	Approved June 2017	106 market housing units; and 106m² commercial floorspace.	Under construction.
M4 and M5	22/04989/REM	Approved April 2023	160 market housing units.	Under construction.
S1 and S2	21/04036/REM	Approved May 2023	373 market housing units.	Under construction.
S3	18/1195/REM	Approved April 2019	186 market housing units.	Complete and operational.
H	19/0156/FUL	Approved July 2019	150 room hotel; 180 room aparthotel; 841m² restaurant; and 92m² café / retail.	Complete and operational.

Rows shaded in grey indicate plots which have been excluded from the planning application boundary for this new Proposed Development.

SITE LOCATION AND DESCRIPTION

- 27 The site covers a total area of approximately 131.5ha 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.
- 28 The site is roughly triangular in shape and currently comprises majority grassland fields, existing residential properties associated with Phase 1 of the 2013 OPP, playing fields, a Sainsbury's Supermarket, Eddington Cricket Field, cleared construction sites, and also incorporates sections of Huntingdon Road (A1307) and Madingley Road (A1303). Agricultural buildings associated with Howe Farm are located within the most northerly extent of the site, along Huntingdon Road.
- 29 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.

- 30 Washpit Brook passes across the site, from the north-east to the south-west.
- 31 Traveller's Rest Pit Site of Special Scientific Interest (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.
- 32 The majority of the site comprises topsoil and clay that emerged as a result of Phase 1 development relating to the 2013 OPP on the site (described further in '*Planning Context and History*' section above).
- 33 Vehicular access to the site can be gained via either Huntingdon Road to the north 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. Pedestrian and cycle access can also be gained via Horse Chestnut Avenue and Bunkers Hill (from Huntingdon Road), as well as Storeys Way to the east of the site. 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.
- 34 There is approximately 41.9ha of land, across multiple land parcels, which is surrounded by the site but are not located within the planning application boundary (as shown in Figure 2 and Figure 5). These parcels of land comprise:
 - Residential properties;
 - University of Cambridge Primary School;
 - Hyatt Centric Hotel and Turing Lock Aparthotel; and
 - United Nations Environment World Conservation Monitoring Centre.
- 35 The site's local context is shown in Figure 5. Photographs of the existing site are shown in Figure 6.

Figure 5 Site Context⁸



⁸ Note: site boundary shown is indicative and is for informative purposes only.

Figure 6 Existing Site Conditions⁹



⁹ 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 2) are not included to allow numbering withing this figure to be easily visible.



ENVIRONMENTAL CONTEXT

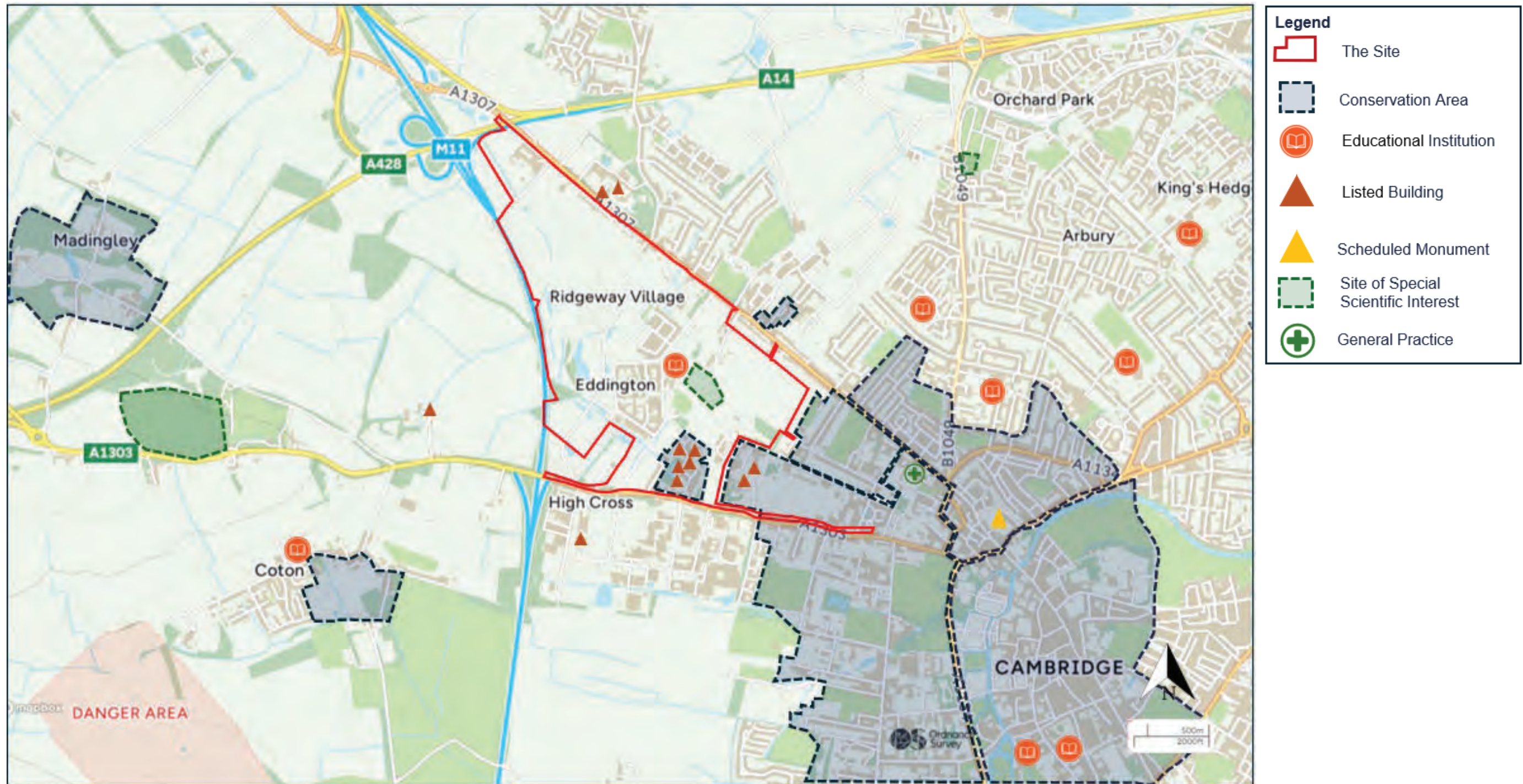
- 36 The area immediately surrounding the site is mixed in nature, mostly comprising low-rise residential properties, educational uses associated with the University of Cambridge and agricultural fields.
- 37 To the north of the site, beyond Huntingdon Road (A1307), is the village of Girton, which comprises low-rise residential properties, Girton College, University of Cambridge and its associated uses, and agricultural fields. To the east of the site is low-rise residential properties. To the south of the site is Madingley Road Park and Ride. Beyond Madingley Road are 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.
- 38 The site and surrounding environmental context is described in Table 2 below and illustrated in Figure 7.

Table 2 Environmental Context	
Environmental Topic	Environmental Context
Socio-Economics	- The University of Cambridge Primary School is surrounded by the site (but is excluded from the planning application redline boundary). Coton C of E Primary School is located 1.8km south-west. There are a number of primary schools located within Cambridge, including Mayfield Primary School and St Luke's School. - North Cambridge Academy, Castle School, Parkside Community College, The Ley's School and Heritage School are all secondary schools located within Cambridge City Centre to the east of the Proposed Development. In addition, Chesterton Community College is located to the north of Cambridge City Centre, and east of the site. - Huntingdon Road GP surgery is located approximately 840m east of the Proposed Development (from the closest boundary) and is currently accepting new patients who live within the practice area.

Environmental Topic	Environmental Context
Traffic and Transport	- Vehicular access to the site can be gained via either Huntingdon Road to the north or Madingley Road to the south of the site. - There are numerous cycleways in close proximity to the site: Eddington Avenue has dedicated verge cycleways adjacent to both sides of the carriageway. To the east, the cycleway provides direct connectivity to Cambridge City Centre and connects with the wider city cycle network. - Within the vicinity of the site, there are a range of Public Rights of Way (PROW), including Footpath 99/5 at the northern end of the site, which provides a connection between Girton and Hardwick. - Cambridge Railway Station is located approximately 3.5km from the closest point of the site to the south-east and provides East Anglia and West Anglia rail services and provides connectivity to further afield areas such as London, Brighton, Birmingham, Peterborough, Ely, Norwich and Ipswich. Cambridge North Railway Station is also located approximately 4.0km north-east of the site. - The site is located to the south of Huntingdon Road (A1307), which runs at an east-west bearing adjacent to the site, and links to the strategic road network approximately 2km to the west at Junction 31 of the M11.
Air Quality	SCDC has no designated Air Quality Management Areas (AQMAs), however 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 (NO₂) Air Quality Strategy objective. The Proposed Development is located approximately 1.5km north-west of the boundary of this AQMA.
Noise and Vibration	- The noise climate is dominated by road traffic sources. - Noise receptors in the vicinity of the site include a range of residential receptors including Howe Farm House, Girton Gate, College Holt, Hadleigh House, Grange House, Thorpe Thorndyke and Trinity Farm. - Non-residential receptors include University of Cambridge Primary School, UN Environment World Conservation Centre, Institute of Energy and Environmental Flows and Travelers Rest restaurant.
Archaeology	There are no statutory or locally designated (archaeological) heritage assets within the site boundary.
Built Heritage	- The site is not located within a Conservation Area, and no listed or local listed buildings are located on-site. Surrounding Conservation Areas - Storey's Way Conservation Area is located approximately 100m east of the site; - Conduit Head Road Conservation Area, approximately 500m south-west; - West Cambridge Conservation Area, immediately to the south-east of the site; and - Howes Place Conservation Area, immediately to the east of the site. Surrounding Scheduled Ancient Monuments (SAM) - Cambridge Castle Mound SAM, approximately 1.2km east Surrounding Listed Buildings - There are six listed which are surrounded by the site, but are not located within the planning application 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). - Four listed buildings border the site: - Schlumberger Gould Research Centre and attached perimeter wall to the north (Grade II*) approximately 300m south; - Northumberland Dome at the observatory (Grade II) approximately 20m east; - The observatory (Grade II), approximately 20m east; and - Girton College (Grade II*), approximately 15m north.

Environmental Topic	Environmental Context
Land Take and Soils	- A detailed soil and Agricultural Land Classification (ALC) survey was undertaken for the site in 2010. The land within the site boundary is classified mostly as Subgrade 3a (good quality land). Approximately 6ha of land in the south and east is classified as Subgrade 2 (best and most versatile (BMV) land. Approximately 4ha in the north of the site is classified as Subgrade 3b (moderate quality land). - Two main soil types are present within the site: to the north is stony loam sand and to the south, calcareous loamy fine earth and clay. - Approximately 22.4ha of the site is unused grassland, most of which has been subject to previous disturbance. The remainder of the site is largely built out but also includes open space, recreational ground and a large balancing pond.
Landscape / Visual	- The western edge of the site and the central Girton Gap are located within the Green Belt. - 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.
Water Resources, Flood Risk and Drainage	- An existing watercourse, Washpit Brook, passes across the site, from south-west of the site to northeast. The River Cam is located approximately 800m to the southeast of the site. - The site is located largely within Flood Zone 1, which has 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. - The site is largely subject to medium-low and unproductive groundwater vulnerability. A small area to the east of the site is subject to medium-high and high groundwater vulnerability. - The site is subject to various levels of risk ('Very Low' to 'High') from surface water flooding, but is predominantly subject to 'Very Low' risk. - The geology underlying the north-east and south-east of the site consists of head clay, silt, sand and gravel superficial deposits which is classed as Secondary Undifferentiated Aquifer.
Ground Conditions	- The site is not located within a groundwater Source Protection Zone (SPZ). - The Head superficial deposits present on site are classified as Secondary (undifferentiated) aquifers and the River Terrace Deposits located to the east of the site are classified as Secondary A aquifers. - Within the site boundary, there is one Site of Special Scientific Interest (SSSI): Traveller's Rest Pit which is designated for geological interest. 1.5km to the northeast, Histon Road SSSI is located, which is also designated for geological interest.
Ecology and Biodiversity	- Eversden and Wimpole Woods Special Conservation Area (SAC) is located over 9.5km to the southwest of the site and is designated for its summer maternity roost of barbastelle bats. - Madingley Wood SSSI is located off-site, 1.8km to the west and on the opposite side of the M11 Motorway. 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. - Within 10km of the site there are 15 Local Nature Reserves (LNRs), and there are several non-statutory designated sites within 2km on the Proposed Development.

Figure 7 Environmental Context¹⁰



¹⁰ Note: site boundary shown is indicative and is for informative purposes only. Site boundary represents outer extent of site boundary. As shown in Figure 2, there are areas of land within the site which are excluded from planning application boundary which are not shown for illustrative purposes. Conservation area and listed building heritage assets are not located within planning application boundary.

THE PROPOSED DEVELOPMENT

- 39 The Applicant intends to submit an outline planning application with all matters reserved, except potentially for primary access, to deliver a comprehensive redevelopment of the site.
- 40 All matters relating to 'Scale', 'Layout', 'Appearance', 'Secondary / Tertiary Access' and 'Landscaping' will be reserved and as such will be subject to outline design parameters that will be sought for outline approval, with the detailed design of these 'matters' to come forward for approval by GCSP later via the submission and determination of future RMAs.
- 41 The design of the Proposed Development is ongoing at the time of preparing this EIA Scoping Report, however, the Proposed Development will likely comprise:
- Up to 4,200 new residential units (Use Class C3);
 - Up to approximately 1,675 student accommodation units (Sui Generis);
 - Up to approximately 675 co-living units (Sui Generis);
 - Up to approximately 6,500m² Gross Internal Area (GIA) of Senior Living (Use Class C2)
 - Up to approximately 100,000m² Gross External Area (GEA) of flexible employment generating floorspace (Use Class E(g)(i) / E(g)(ii) / E(g)(iii) / Sui Generis), including academic floorspace (Use Class F1);
 - Up to approximately 6,000m² GEA of flexible floorspace, likely to comprise retail, nursery, health and indoor sports uses (Use Class E(a) – E(f));
 - Up to approximately 45ha of public open space, including children play space, sports pitches, allotments and a sustainable urban drainage network;
 - Hard and soft landscaping features; and
 - Ancillary uses and plant.
- 42 Alterations to the operation of the existing Phase 1 plots (Lots 1, 2, 3, 5 and 8) located within the planning application boundary may be proposed as part of the Proposed Development, which will be assessed accordingly within the ES, where relevant.
- 43 Buildings will generally range between 2 and 6 storeys (7m and 25m in height above ground level), with some flexibility for the location of higher building elements where appropriate, with a townscape focus. Basements are proposed as part of the Proposed Development.
- 44 The energy strategy for the Proposed Development is still evolving at this stage. It is currently anticipated that this will likely comprise heat pump-based heating solutions with a fully electrified development, that also incorporates renewable technologies. However, if combustion sources are proposed, this will be assessed accordingly within the ES.
- 45 The Proposed Development will deliver additional pedestrian and cyclist access throughout the site.

Non-Potable Water Strategy

- 46 The non-potable water strategy for the site is still evolving at this stage. The Applicant is investigating two potential options for rainwater harvesting and non-portable water distribution, comprising the following:
- Option 1 – individual plot storm saver systems that store rainwater in below ground tanks, then treat and distribute locally; or
 - Option 2 – several large lagoons to store stormwater before it is pumped to a main lagoon, treated, then distributed around the site to be used for non-potable applications.
- 47 In the case that the outline planning application seeks flexibility with regards to the non-potable water strategy, and both options are sought for approval in order to maintain maximum flexibility, this will be

reflected within the relevant Control Documents (detailed in *The Outline Planning Application* section below) and will be assessed accordingly within the ES, i.e. via appropriate assessment scenarios which fully consider the implication of each scenario as relevant.

Phasing Strategy

- 48 It is anticipated that the enabling, demolition and construction of the Proposed Development will be phased across four overlapping phases. Where appropriate, occupants/users of the early completed phases, as well as future occupants of Phase 1 plots which are still under construction, will be considered as 'introduced' sensitive receptors during the later construction phases. The indicative enabling and construction programme to be assessed within the ES is still being developed as the Proposed Development evolves, however, it is anticipated that it will be phased over a period of approximately 10 years. An indicative enabling and construction programme and associated construction logistics will be presented within the ES.

THE OUTLINE PLANNING APPLICATION

- 49 The Town and Country (Development Management Procedure) (England) Order 2015¹¹ ('DMPO') sets out requirements and guidance for outline planning applications. A parameters-based approach will be taken for the outline planning application and EIA. The outline planning application will be supported by Parameter Plans which allow for a degree of flexibility. Enough information will be presented to allow a sufficient assessment of potential impacts and likely significant effects of the completed and operational development. Any assumptions made will be clearly presented in the narrative.
- 50 The planning application will include the following Control Documents:
- Site Location Plan and Site Plan;
 - Existing Plans;
 - Development Specification;
 - Parameter Plans; and
 - Design Code(s).
- 51 The submitted Parameter Plans will set out scale (maximum building heights, with limits of deviation), layout, land use, public realm and access and movement within the site.
- 52 The Development Specification submitted with the planning application will describe and set out each of the Parameter Plans and also define the maximum land use quantum proposed for each Use Class that could come forward across the site, as well as minimum commitments (e.g., open space), as relevant.
- 53 In addition to the Parameter Plans, the application will be supported by a number of Design Codes which will provide controls within which future detailed designs will be brought forward for future RMAs, ensuring that high quality design and architecture is delivered at reserved matters stage in regard to layout, scale, massing, access, appearance and landscaping whilst providing sufficient flexibility to allow architectural interpretation to take place.
- 54 For certain technical assessments, such as socio-economics, assessing the maximum quantum of floorspace does not always represent a reasonable worst case scenario in relation to non-residential land uses which generate employment. As such, when considering employment generated by the Proposed Development, for some technical assessments a worst-case minimum will be assessed. This will be clearly set out as relevant within the assessment methodology of the respective ES chapters.
- 55 The Design and Access Statement which will be submitted in support of the planning application will present the Proposed Development design to a level appropriate for the outline stage. This will include

¹¹ *Town and Country Planning, England (2015)*. Available at: http://www.legislation.gov.uk/uksi/2015/595/pdfs/uksi_20150595_en.pdf

an illustrative masterplan which will demonstrate one way in which the Proposed Development could be brought forward within the outline parameters sought for approval. Where the illustrative masterplan is used/considered for the purposes of assessment, this will be set out as relevant within the assessment methodology of the respective ES chapters. The results of any assessment of the illustrative masterplan will not be relied on to conclude the impacts of any effects, and will only ever be supplementary to the main assessment of the reasonable worst-case scenario.

SCOPE OF THE EIA

EIA Methodology

- 56
- This EIA Scoping Report constitutes a request for an EIA Scoping Opinion from GCSP. EIA Scoping refers to the process of identifying those environmental aspects that may be significantly affected by the Proposed Development. In doing so, the potential significance of effects associated with each environmental aspect becomes clearly defined, resulting in the identification of issues to be addressed in the EIA (i.e., these aspects are ‘scoped in’ to the ES).
- 57
- Defining the scope of an EIA is an important part of the overall EIA process and is recommended by best practice. In accordance with Regulation 15 of the EIA Regulations and current EIA best practice, this EIA Scoping Report sets out the following information to assist GCSP in formulating its EIA Scoping Opinion:
- A plan sufficient to identify the land;
 - Brief description of the nature, purpose, size and scale of the Proposed Development;
 - The proposed approach to the EIA;
 - Consultation that will be undertaken as part of the EIA;
 - The key environmental issues identified in respect of the Proposed Development;
 - A summary description of the likely significant environmental effects of the Proposed Development, together with the approach and methodology for assessing them; and
 - The intended structure of the ES.
- 58
- Where topics are considered likely to result in significant environmental effects (i.e., ‘scoped in’), the technical topics have provided their scope of assessment and cumulative assessment approach within this report. This is provided in **Annex D: Scoped In Topic Sheets**.
- 59
- Where topics are considered unlikely to result in significant environmental effects (i.e., ‘scoped out’), the technical topics have provided their reasoning within this report. This is provided in **Annex E: Scoped Out Topic Sheets**.
- 60
- Further detail on the EIA Methodology can be found within **Annex A: Approach to EIA Scoping and EIA Methodology**. This annex provides further detail on the EIA Scoping approach and EIA purpose, process, methodology and assessment approach.
- Environmental Topics
- 61
- The following table (Table 3) sets out the proposed scope of the EIA. Further detail on each topic is provided in the annexes to this Scoping Report.

Table 3 Scope of the EIA

Topic	'Scoped Into' the EIA ✓ 'Scoped Out' of the EIA ✗		Additional Assessments / Reports to Accompany the Planning Application
	Enabling, Demolition and Construction	Completed Development	
Socio Economics	✓	✓	N/A
Health	✗	✗	Health Impact Assessment to be submitted in support of the planning application (<i>appended to the ES</i>)
Traffic and Movement	✓	✓	Transport Assessment (<i>standalone planning report i.e., not appended to the ES</i>) Draft Travel Plan
Air Quality	✓	✓	N/A
Climate Change / Greenhouse Gas Emissions	✓	✓	N/A
Noise and Vibration	✓	✓	N/A
Ground Conditions and Land Contamination	✓	✓	Phase 1 Preliminary Risk Assessment (<i>appended to the ES</i>)
Land Take and Soils (Agriculture)	✓	✓	Agricultural Land Classification Survey (<i>appended to the ES</i>)
Daylight, Sunlight, Overshadowing, Solar Glare and Light Pollution	✗	✗	N/A
Wind Microclimate	✗	✗	N/A
Landscape and Visual Impact Assessment	✓	✓	N/A
Built Heritage	✓	✓	
Archaeology	✗	✗	N/A
Ecology and Biodiversity	✓	✓	Preliminary Ecological Appraisal Biodiversity Net Gain Report River Condition Assessment + protected species survey reports (<i>appended to the ES</i>)
Project Vulnerability	✗	✗	
Waste and Materials	✗	✗	
Water Resources, Flood Risk and Drainage	✓	✓	Flood Risk Assessment and Drainage Strategy (<i>appended to the ES</i>)

PROPOSED STRUCTURE OF THE ES

- 62 The proposed scope and structure of the ES is as follows:
- **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 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 Resources, Flood Risk and Drainage;
 - Chapter 15. Effect Interactions;
 - Chapter 16. Likely Significant Effects and Conclusions; and
 - Chapter 17. Environmental Management, Mitigation and Monitoring Schedule.
 - **ES Volume 2: Landscape and Visual Impact Assessment** – a separate landscape and visual and impact assessment document that will be accompanied by a set of views and associated appendices:
 - **ES Volume 3: Technical Appendices** – comprises background data, technical reports, tables, figures and surveys.
 - **ES Non-Technical Summary (NTS)** - this will be a separate document providing a concise description of the Proposed Development, the alternatives considered, any identified mitigation measures and the residual likely significant environmental and socio-economic effects.

REQUEST FOR AN EIA SCOPING OPINION

- 63 This Scoping Report requests a Scoping Opinion of the GCSP pursuant to Regulation 15 of the EIA Regulations. The Scoping Report suggests a comprehensive scope of work based on the experience of the assembled team of specialists and knowledge of the site, and has been informed, as relevant, by the findings of the previous 2013 ES. The GCSP and consultees are invited to consider the contents of this Scoping Report and comment accordingly within the five-week period prescribed by the EIA Regulations.

ANNEX A: APPROACH TO EIA SCOPING AND EIA METHODOLOGY

ANNEX A: APPROACH TO EIA SCOPING AND EIA METHODOLOGY

Use of Competent Experts

Trium Environmental Consulting LLP (Trium) has been commissioned by the Applicant to prepare a request for an EIA Scoping Opinion for the redevelopment of the site in line with the requirements of the EIA Regulations and relevant EIA guidance.

This includes submitting an EIA Scoping Opinion Request Report (hereafter referred as the 'EIA Scoping Report') to the local authority that sets out the proposed scope of the EIA and the content and approach to preparing the ES that will be submitted to accompany the planning application.

The EIA Regulations require that in order 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'. Trium considers that these requirements are equally important and relevant to the EIA scoping process in addition to the preparation of the ES. As such, in accordance with this requirement, the following statement is provided:

"Trium is an environmental consultancy specialising in urban regeneration and 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 urban regeneration 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 500 EIAs within the retail, residential, leisure, commercial, cultural, infrastructure and industrial sectors. Trium lead EIA practitioner for this project has over 20 years of EIA experience, predominantly focussing on major urban regeneration projects."

Information on Trium's lead EIA practitioners (partner and project manager), as well as the technical contributors to the EIA, will be included within the Environmental Statement.

EIA Purpose and Process

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 significant environmental effects, and appropriate mitigation and monitoring can be put in place.

Regulation 4 of the EIA Regulations sets out the EIA process. Specifically, Regulation 4(2) states that "the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors:

- (a) population and human health;
- (b) biodiversity;
- (c) land, soil, water, air and climate;
- (d) Material assets, cultural heritage and the landscape;
- (e) The interaction between the factors referred to in sub-paragraphs (a) to (d)."

The potential for likely significant effects on the below topic areas, during both the enabling and construction works associated with the Proposed Development and once the Proposed Development is complete and operational, have been considered:

- Agriculture;
- Air Quality;

- Archaeology (Buried Heritage);
- Built Heritage;
- Climate Change;
- Daylight, Sunlight, Overshadowing, Light Spillage and Solar Glare;
- Ecology and Biodiversity;
- Ground Conditions and Land Contamination;
- Greenhouse Gas Emissions;
- Health;
- Landscape and Visual;
- Noise and Vibration;
- Project Vulnerability (Major Accidents and Natural Disasters);
- Socio-Economics;
- Traffic and Movement;
- Waste and Materials;
- Water Resources, Flood Risk and Drainage; and
- Wind Microclimate.

EIA Scoping forms one of the first stages of the EIA process. Requesting an EIA Scoping Opinion from a local planning authority, under Regulation 15 of the EIA Regulations, involves the preparation of an EIA Scoping Opinion Request Report (or EIA Scoping Report) and its submission to the local planning authority is part of a formal request for their opinion on the content or 'scope' and approach to the EIA.

The purpose of scoping is to identify:

- The important environmental issues and topics for consideration in the EIA;
- The baseline conditions and assessment methodology to be used for assessment;
- Any potentially sensitive receptors that may be affected by the development being proposed;
- The appropriate space boundaries of the EIA: the site boundary and surrounding environmental context;
- The information necessary for decision-making; and
- The topics of which could result in potential significant effects from the development both during its enabling and construction and operation.

In accordance with the requirements of the Town and Country Planning (Development Management Procedure) Order 2015 (article 18, Schedule 4), this EIA Scoping Report will need to be issued by the local planning authority to the statutory consultees that are considered to have an interest in the EIA of the Proposed Development and should be consulted as part of the EIA Scoping process. It is expected that the local planning authority will also issue the EIA Scoping Report to non-statutory and key, local stakeholders and interest groups who are deemed to similarly have an interest in the EIA of the Proposed Development.

The process of consultation is a key requirement of the EIA process and the views of statutory consultees and other stakeholders help to identify specific issues, as well as identifying additional information in their possession, or of which they have knowledge, which may be of assistance in progressing the EIA.

The ES will append the EIA Scoping Report (this document) and Scoping Opinion and include a summary of any other consultation undertaken as part of the EIA process.

EIA Methodology and Approach to Assessment of the Proposed Development

In addition to the EIA Regulations, there is also guidance available that has been referenced where appropriate, including but not limited to:

- At a European level, reference has been made to the European Commission's (EC) various EIA guidance documents available here: <http://ec.europa.eu/environment/eia/eia-support.htm>
- At a domestic level, reference has been made to the Ministry of Housing, Communities and Local Government's (MHCLG) overarching PPG¹²;
- In addition, the Highways England, 2020, Design Manual for Roads and Bridges 'Sustainability and Environment' – LA104 Environmental assessment and monitoring has been referred to as applicable;
- in relation to publications from professional bodies, reference has been made to IEMA publications as these include best practice/suggested improvements to the EIA process. This includes:
 - IEMA ES Review Criteria (COM3-6)¹³;
 - IEMA 'Guidelines for Environmental Impact Assessment' (2004)¹⁴;
 - IEMA 'Special Report into the State Environmental Impact Assessment Practice in the UK' (2011)¹⁵;
 - IEMA 'Shaping Quality Development' (2015)¹⁶;
 - IEMA 'Delivering Quality Development' (2016)¹⁷;
 - IEMA 'Delivering Proportionate EIA' (2017)¹⁸;
 - IEMA 'Guide to Materials and Waste in EIA' (2020)¹⁹;
 - IEMA 'Climate Change Resilience and Adaption' (2020)²⁰;
 - IEMA 'Major Accidents and Disasters Guidelines' (2020)²¹;
 - IEMA 'Principles of Cultural Heritage Impact Assessment in the UK' (2021)²²
 - IEMA 'Assessing Greenhouse Gas Emissions and Evaluating their Significance: 2nd Edition' (2022)²³;
 - IEMA 'A New Perspective on Land and Soil in Environmental Impact Assessment' (2022)²⁴;
 - IEMA 'Effective Scoping of Human Health in EIA' (2022)²⁵;
 - IEMA 'Determining Significance for Health in EIA' (2022)²⁶; and

¹² MHCLG. Planning Practice Guidance: <https://www.gov.uk/government/collections/planning-practice-guidance>

¹³ Institute of Environmental Management and Assessment, undated; EIA Quality Mark – ES Review Criteria COM 3-6.

¹⁴ Institute of Environmental Management and Assessment, 2004, Guidelines for Environmental Impact Assessment.

¹⁵ Institute of Environmental Management and Assessment, 2011. The State of Environmental Impact Assessment Practice in the UK.

¹⁶ Institute of Environmental Management and Assessment, November 2015. Shaping Quality Development.

¹⁷ Institute of Environmental Management and Assessment, 2016; Delivering Quality Development.

¹⁸ Institute of Environmental Management and Assessment, 2017; Delivering Proportionate EIA

¹⁹ Institute of Environmental Management and Assessment, 2020; Guide to Materials and Waste in Environmental Impact Assessment

²⁰ Institute of Environmental Management and Assessment, 2020; Climate Change Resilience and Adaption

²¹ Institute of Environmental Management and Assessment, 2020, Major Accident and Disasters Guidelines

²² Institute of Environmental Management and Assessment, 2021; Principles of Cultural Heritage Impact Assessment in the UK

²³ Institute of Environmental Management and Assessment, 2022, Assessing Greenhouse Gas Emissions and Evaluating their Significance: 2nd Edition

²⁴ Institute of Environmental Management and Assessment, 2022, A New Perspective on Land and Soil in Environmental Impact Assessment

²⁵ Institute of Environmental Management and Assessment, 2022, Effective Scoping of Human Health in EIA.

²⁶ Institute of Environmental Management and Assessment, 2022, Determining Significance of Health in EIA.

- IEMA 'Environmental Assessment of Road Traffic' (2023)²⁷.

- Whilst primarily written for major infrastructure projects, reference is also made to guidance/advice notes published by the National Infrastructure Planning where appropriate, as these can include relevant/helpful information; and
- Applicable case law.

The method behind the EIA process generally²⁸ takes into account the existing conditions of the area into which the development is being introduced (**the baseline**) and makes reasonable predictions of the likely change (**the impact** – in terms of magnitude) that may occur, during both its construction and when the development is completed and operating as proposed. The predicated impact is considered in terms of key environmental and social aspects (**receptor / resource**) found within the surrounding area, and based on their sensitivity to change, the resulting change experienced by the receptor / resource (the effect) is then determined. Any mitigation measures required in order to reduce or eliminate adverse effects are then considered and assessed, with the residual effect being determined as significant or not. The likely significant effects are then reported (within an environmental statement) for consideration by the relevant planning authority when considering whether to grant planning permission for a development.

Alternatives and Design Evolution

In addition, the EIA Regulations require (Schedule 4) that the ES provides “a description of the reasonable alternatives [...] relevant to the proposed project and its specific characteristics” which have been considered by the Applicant and “an indication of the main reasons for selecting the chosen option, including comparison of environmental effects”.

The ES will summarise the evolution of the Proposed Development, any relevant alternatives considered, and key modifications made during the design process. Environmental considerations which have influenced this process will be discussed, and a qualitative comparison will be undertaken of the different design options and their relevant environmental effects, as relevant. Matters that will be considered in terms of design evolution include land uses, layout, building heights and massing. The preferred design, culminating with the Proposed Development being sought for approval, will be discussed.

A specific chapter, **ES Volume 1, Chapter 3: Alternatives and Design Evolution**, will focus on the consideration of the main alternatives (as relevant) and the design evolution. The focus will be on main alternatives considered (as relevant), the evolution of the design, and how environmental considerations influenced the evolution of the scheme. The summary of the design evolution will also consider initial environmental analysis undertaken on the evolving scheme.

Assessment Scenarios

The ES will consider the following main assessment scenarios:

- Baseline Year – of 2025 (or an alternative baseline year as identified within the technical assessments);
- Enabling, Demolition and Construction;
- Phasing – as relevant for each technical assessment;
- Opening Year – opening year of the fully completed and operational development; and
- Cumulative – the Proposed Development with other surrounding development schemes, often referred to as 'cumulative schemes'.

²⁷ Institute of Environmental Management and Assessment, 2023; Environmental Assessment of Road Traffic.

²⁸ There may be exceptions to the general approach described. Where there are exceptions, this will be clearly described within the relevant methodology section, outlining both the departure from the general EIA methodology and the description of the alternative approach. This is discussed further within 'EIA Process and Methodology' section of this EIA Scoping Report.

Where any future years are required to be assessed by the technical assessments, these will be clearly identified within the relevant technical ES chapters.

Baseline Conditions

Baseline assessments will 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 Opinion and consultation process. This information will be used to present within the ES (within the individual technical chapters) an up to date description of the current baseline conditions of the site and surrounding area.

In accordance with industry best practice, some assessments (such as traffic and movement, noise and vibration and air quality) when assessing the effects of the operation of the Proposed Development will include a projected environmental condition in the future (i.e. 'future baseline'), at the projected year of opening of the Proposed Development (if relevant a different future year appropriate/specific for the technical assessment may be used). Where using a future baseline is more appropriate, this will be detailed in the relevant methodology of the technical assessment and be made clear in the ES.

In addition, as per the requirements of the EIA Regulations, consideration as to how the current baseline conditions may evolve in the future in the absence of the Proposed Development will also be presented in the ES (within the individual technical chapters). This likely evolution of the baseline conditions will be considered qualitatively, supplemented by quantitative information where relevant and will be used to support the assessment of cumulative development effects.

Sensitive Receptors

When undertaking an EIA, it is important to identify potential environmental receptors which may be impacted by the Proposed Development and may need to be considered as part of the assessment.

The environmental receptors that may be sensitive to change are identified and discussed within the scope of each technical topic in this EIA Scoping Report (hereafter referred to as 'sensitive receptors'). The sensitive receptors outlined within this EIA Scoping Report have been identified at the time of writing as part of the EIA scoping process, however these will be reviewed during preparation of the ES and may be subject to change.

Due to the phased nature of the Proposed Development, introduced sensitive receptors will be considered where relevant throughout the ES. Existing occupants of Phase 1, as well as future occupants of Phase 1 plots that are still under construction, will also be considered as sensitive receptors, where relevant.

Enabling, Demolition and Construction Impact Assessments

The ES (within an informative ES chapter titled 'Enabling, Demolition and Construction') will provide an outline of the anticipated enabling and construction phasing and programme and related activities and aspects (i.e. enabling works, substructure works, superstructure works etc., waste volumes and construction material quantities, HGV movements and HGV routing). In addition, key environmental controls and management measures relevant to the Proposed Development (including relevant codes of construction practice) will be presented.

This information will inform the enabling and construction impact assessments. Throughout the enabling and construction impact assessments, the assumption will be made that the standard environmental controls required under legislation and best practice guidance are met as a matter of course.

The assessment of the potential for likely significant effects arising during the enabling, demolition and construction works will be addressed within each of the individual technical assessment chapters of the ES. Defined baseline conditions will be considered and will, as appropriate/ relevant, take into account any phased enabling, demolition and construction works (whilst the construction phasing and programme is still being developed, any phasing will be considered within the technical assessments

where applicable and any introduced receptors to the site whilst further construction is ongoing will be assessed) and subsequent use of the completed Proposed Development.

The enabling, demolition and construction assessments presented within the technical chapters of the ES will 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.

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

All the measures proposed within the technical chapters will be compiled and presented in a mitigation and monitoring schedule (to be presented as a separate chapter within the ES).

It is anticipated that any required enabling and construction related environmental management / mitigation and monitoring measures would be secured and controlled through an appropriate Construction Environmental Management Plan ('CEMP') (or equivalent) and it is proposed that the requirement for this document be secured by means of suitably worded planning conditions to be attached to the permission (if granted). Key mitigation and management controls that would later form part of a CEMP will be presented in the ES to help define the policies, procedures and management framework for the implementation of any identified specific environmental management and mitigation.

Phasing

Given the scale of the Proposed Development and anticipated duration of the phasing, an indicative Phasing Plan will be submitted with the planning application and an assessment of potential effects during construction and operation of the various phases will be conducted where appropriate.

The requirement for a phased assessment will be considered on a topic-by-topic basis as relevant.

Completed Development Impact Assessments

The Applicant intends to submit an outline planning application. The outline planning application will seek approval of outline design parameters and a development specification for all of the proposed buildings on site. For the outline elements of the planning application, 'matters' relating to land use and amount of development, scale, layout, access, appearance and landscaping shall be reserved for approval at a later date through the submission of Reserved Matters Applications to GCSP, with the potential approval for primary access in detail.

Whilst details of the following 'matters' are reserved for future determination; approval will be sought for Parameter Plans, a Development Specification and a Design Code.

At this stage the Parameter Plans will include details of:

- Land Use and Amount – the building / site use or uses proposed for the development and the maximum amount of development including the quantum of floorspace proposed for each use class, including flexibility across use classes;
- Scale of Development – the maximum height limit for each development zone or building plot in relation to their surroundings;
- Access – the means of access to and within the site for vehicles²⁹, cycles and pedestrians;
- Layout of Development – the way in which development areas or building plots, routes and open spaces are provided situated and orientated in relation to each other; and
- Landscape and Open Space – identifying strategic areas of open space indicating the role and purpose of different spaces, landscape and other facilities (e.g. equipped areas for play).

The planning application will seek approval for an 'Amount of Development' for the Proposed Development. This is the quantum (amount) of floorspace proposed for each use class; in some cases, flexibility across a range of uses classes may be sought. An 'Amount of Development' represents an

²⁹ Primary access may be detailed as part of the planning application

'up to' or 'maximum' amount of development that could come forward across the site and across a range of use classes.

The planning application will also be supported by design related 'control documents' which will include a Development Specification and Design Code which will describe the principal components of the development, provide guidance that will guide future reserved matters applications, and which will act as controls to limit development within the outline parameters set and approved at the outline stage. These documents (in addition to the Parameter Plans) will set out the information required to allow the impacts of the Proposed Development to be identified with sufficient certainty.

The outline planning application will include a Landscape Strategy (or equivalent) which will set out the landscaping concept and landscaping principles for the Proposed Development. Detailed landscaping design will be determined at reserved matters stage.

Should the outline planning permission be consented, subsequent Reserved Matters Applications will be made to GCSP to agree the design details that have been 'reserved' for later approval by the Applicant and GCSP under the outline planning consent.

The ES will present a description of the Proposed Development, in terms of the parameters and where relevant, detailed design sought for approval. Sufficient information will be presented to enable the assessment of potential impacts and likely significant effects of the completed and occupied development. Any assumptions made will be clearly presented in the narrative.

For the components of the Proposed Development where the design detail is reserved for subsequent approval, the outline design parameters shall be assessed – comprising scale, layout, access, appearance and landscaping. The maximum scale and layout parameters sought for approval, as per the Parameter Plans shall be assessed, as this represents a reasonable worst-case scenario for the majority of assessments included within the ES.

The EIA will also assess the maximum (or minimum if relevant) amount of development across the mix of uses sought for approval as a worst-case scenario.

In terms of socio-economics, the EIA will firstly assess the maximum amount of development across the mix of uses sought for approval. However, there are likely to be components of this assessment where a lower amount of floorspace presents the worst-case scenario, for example in terms of job generating floorspace. Where this is the case, a minimum development scenario based upon reasonable assumptions from the illustrative scheme will be assessed.

An illustrative masterplan will be submitted in support of the planning application to show one way in which the Proposed Development could come forward within the maximum parameters. However, this will not be submitted for approval and as such, will not be the subject of the impact assessment to determine the likely significant effects, reported upon within the ES. Any assessment of the illustrative masterplan will be secondary to the reasonable worst-case, parameters based, assessment. The results of any assessment of the illustrative masterplan cannot be relied on to conclude the impacts of any effects, this can only come from the assessment of the reasonable worst-case scenario.

Environmental Design Management Measures

Throughout the EIA (including this EIA Scoping Report and the ES), where applicable, the way that likely environmental effects have been or will be avoided, prevented, reduced or offset through design and/or management measures will be described. These are measures that are inherent in the design and construction of the Proposed Development (also known as 'embedded measures'). Where known at this stage, some of these embedded measures have been identified at the EIA scoping stage and are described, where relevant, in the technical topic annexes.

Embedded measures relevant to the construction phase will be summarised within **ES Volume 1, Chapter 17: Environmental Management, Mitigation and Monitoring Schedule**. These measures

are to be included within a CEMP, the requirement for which is proposed to be secured via an appropriate planning condition.

For the operational phase, such embedded measures will be integral to Proposed Development. A number of technical studies (e.g. ecology) have been undertaken to inform the design and allow early identification of mitigation measures so that these can be incorporated into the Proposed Development. Embedded measures are therefore either incorporated into the scheme sought for approval from the outset or identified through the assessment process. Proposed environmental enhancements will also be described, where applicable. The scheme's development has been informed by a series of workshops which have involved a wide range of environmental specialists to ensure that constraints and opportunities have been properly identified, understood and, where required, measures incorporated into designs for the Proposed Development.

Embedded measures will be considered prior to the assessment of effects to avoid considering assessment scenarios that are unrealistic in practice, i.e. do not take account of such measures even though they are likely to be standard practice and/or form part of the proposed design. These will then be followed through the assessment to ensure that realistic likely environmental effects are identified. Where likely significant adverse effects are identified after considering these embedded measures, 'further mitigation measures' will be proposed.

All embedded mitigation and enhancement measures relevant to the ES assessments will be described within the **ES Volume 1, Chapter 4: Proposed Development**, with the rationale for the inclusion of the identified embedded measures and the associated commitment to implementing such measures clearly stated. In addition, mitigation and enhancement measures and any monitoring requirements will be summarised within **ES Volume 1, Chapter 17: Environmental Management, Mitigation and Monitoring Schedule**, which will also indicate the mechanism for securing these measures (e.g. through planning conditions and/or Section 106 agreement obligations).

Cumulative Effects Assessment

The cumulative assessment will be based on the information available on the local authorities planning register. Generally, the schemes (referred to as 'cumulative schemes') to be included within the cumulative effects assessment will be within 1km of the site subject to a planning application (and is either yet to be determined, have planning consent or a resolution to grant) and comprise either:

- An uplift of more than 10,000m² (Gross External Area (GEA)) of mixed-use floorspace or, provide over 150 residential units; or
- Office to residential conversions (granted under the General Permitted Development Order) giving rise to over 150 residential units; or
- Any development / change of use adjacent to the site.

By applying an initial screening exercise (using the above criteria) to all the surrounding redevelopment schemes, the cumulative effects assessment of the EIA becomes more focused on the larger schemes (i.e. those with the most potential to interact in a cumulative manner).

A preliminary list of cumulative schemes for consideration within the EIA has been identified and is presented in **Annex C: Cumulative Schemes**. As part of this EIA scoping process, the local authority (and other consultees, as relevant) are invited to comment on the proposed cumulative schemes, so that the list of cumulative schemes can be agreed.

Each technical chapter of the ES will consider the potential for cumulative effects associated with the schemes identified for inclusion within the cumulative effects assessment. Each technical ES chapter will be clear on the cumulative schemes that have been considered within the cumulative effects assessment.

Other schemes that are under construction, where the construction works are significantly progressed (i.e. likely to be completed before the opening year of the Proposed Development / first occupation on site) or where early phases are occupied, will be factored into the baseline scenario for assessment.

Effect Interactions Assessment

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, airborne dust or traffic on a single receptor.

Effect Interactions from the Proposed Development itself on particular receptors at the site and within the surrounds will be considered during the enabling and construction works and also once the Proposed Development is completed and operational. Dependent on the relevant sensitive receptors, the assessment will focus either on key individual receptors or on groups considered to be most sensitive to potential effect interactions. The potential interaction of residual effects that are of minor, moderate or major scale, will be considered within this assessment. Residual effects which are negligible, will be excluded from this assessment as by virtue of their definition, they are considered to be imperceptible.

There is no established methodology for assessing the impact of cumulative effects on a particular receptor. The interaction of a combination of individual effects would be determined to be either 'not significant' or 'significant', a scale of the combined effects (minor, moderate or major) would not be applied. If 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 will be deemed 'significant'. If none of the individual effects are significant, consideration will be given as to whether the combination of 'not significant' effects could result in a combined significant effect, based on professional opinion.

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 will be 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 will not been assigned.

Consideration of effect interactions will be presented within the ES in a separate chapter (i.e. Effect Interactions (Volume 1)).

Determining Effect Significance – Terminology and Approach

Reference to 'Impact' and 'Effect'

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 or socio-economic 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 potentially other factors (such as duration). The description 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

To achieve a consistent approach across the different technical disciplines addressed within the ES (Volume 1 and Volume 2), assessments will broadly define the sensitivity of the receptors that could be affected by the Proposed Development and the magnitude of impact or change from the baseline. Terminology to describe the sensitivity of receptors and magnitude of impact or change from the baseline conditions is broadly as follows:

- High;
- Medium;
- Low;

- Negligible; and
- No Impact (in relation to magnitude of impact or change only).

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

Each of the technical assessment chapters of the ES (Volume 1 and 2) will provide 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 will be 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.

Identification of a Resultant Effect

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 1. The following matrix will be adapted for each relevant topic in line with specific methodology requirements.

Table 1 Resultant Effects

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

Effect Scale

The categories and definitions of the 'scale' of the resultant effect i.e. definitions of Major, Moderate, Minor and Negligible effects will be adjusted to suit the technical topic in question; where this is the case revised definitions of effect scale will be presented in the technical assessment chapters of the ES (Volume 1) and in ES Volume. Where there is no impact to a receptor and therefore no effect, this will be stated.

Effect Nature

Table 2 provides general definitions of the 'nature' of the resultant effect i.e. definitions of Adverse, Neutral and Beneficial. Typically, the 'nature' of an effect is defined where the 'scale of the effect' is classified as minor, moderate or major (i.e. the 'nature' is not typically defined for effects classified as negligible in scale).

Table 2 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.
Neutral	The quality of the environment is preserved or sustained or there is an equal balance of adverse and beneficial effects.
Beneficial	Advantageous or positive effect to an environmental / socio-economic resource or receptor. The quality of the environment is enhanced.

Geographic Extent of Effect

The ES will identify 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 the GCSP area beyond the vicinity of the site and its neighbours are considered to be at a 'district / borough' level. Effects affecting Cambridge are considered to be 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.

Effect Duration

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

Direct and Indirect Effects

The ES will identify 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).

Effect Significance

Following identification of an effect, the effect scale, nature, geographic extent and duration using the above summarised terminology, a clear statement will then be made within the ES as to whether the effect is significant or not significant. As a general rule, the following applies (however each technical chapter will confirm what scale of effect they deem as being 'significant' within their respective chapters):

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

Where mitigation measures are identified to either eliminate or reduce likely significant adverse effects, these will be incorporated into the ES, for example either through the design, or will be translated into enabling and construction commitments; or operational or managerial standards / procedures.

The ES will then highlight the 'residual' likely significant effects (those effects which remain following the implementation of suitable mitigation measures) and will classify these in accordance with the terminology defined above.

ANNEX B: PLANNING POLICY

ANNEX B: PLANNING POLICY

The ES, within **ES Volume 1, Chapter 2: EIA Methodology**, will define the relevant national, regional and local policy context. Specifically, the ES will list out the key relevant policy documents but will not discuss the policies within these in any detail.

Although relevant policies out of the key planning policy documents will, in some instances, inform the scope and the methodology of the technical assessments within the EIA, the Proposed Development's compliance with and performance against the relevant planning policies will be appraised within the Planning Statement which will be a standalone document that is submitted in support of the planning application. It is not the purpose of the ES to appraise the Proposed Development against relevant national, regional and local planning policy standards / targets.

Where planning policy informs the scope and the methodology of the technical assessments of the EIA, the policies will be presented in the ES (in the relevant technical topic chapters) and discussed as necessary. Any policy detail required to support the relevant impact assessment scope, methodology or assessment of effects, will either be provided within the technical topic chapter itself or within an appendix to the ES.

National Planning Policy and Guidance

The EIA will be undertaken having regard to the National Planning Policy Framework ('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.

As relevant to the EIA, specifically to the scope, methodology and assessment of effects for the EIA technical topics, the NPPF shall be considered throughout undertaking of the EIA and preparation of the ES.

The EIA will also refer to, as relevant to the EIA technical topics, the Planning Practice Guidance ('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

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

Cambridge Local Plan (2018)

The Cambridge Local Plan 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).

The site is designated as a Major Development site within the Cambridge Local Plan, and allocated within the North West Cambridge Area Action Plan (described below).

South Cambridgeshire Local Plan (2018)

The South Cambridgeshire Local Plan 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).

The site is designated as a Major Development site within the South Cambridgeshire Local Plan, and is allocated within the North West Cambridge Area Action Plan (described below).

The North West Cambridge Area Action Plan (2009)

The North West Cambridge Area Action Plan forms part of the development plans for CCC and South Cambridgeshire District Council (SCDC), as described above.

The North West Cambridge Area Action Plan relates to the allocated site area between Madingley Road and Huntingdon Road, which was prepared jointly by CCC and SCDC. 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 for housing, student accommodation, and new faculty buildings for the University of Cambridge.

Emerging Planning Policy and Guidance

Greater Cambridge Local Plan

CCC and SCDC are in the process of drafting a joint Local Plan 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).

The First Proposals of the Greater Cambridge Local Plan (Regulation 18 Version)³⁰ was published in 2021, with consultation running from November to December 2021.

The site forms an 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. The updated policy will enable development of additional dwellings on the site, beyond those identified in the current site allocation.

Other Guidance

In addition to any relevant planning policies that inform the scope, methodology or assessment of effects, as relevant, the technical topic chapters of the ES will present a summary of any pertinent recognised industry guidance documents.

³⁰ Greater Cambridge Shared Planning (2021); First Proposals. Greater Cambridge Local Plan (Regulation 18: Preferred Options 2021).

ANNEX C: CUMULATIVE SCHEMES

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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 of effects with other existing and/or approved projects” (Schedule 4, 5(e)). Table 3 presents the list of cumulative schemes that have been considered within the cumulative effects assessment of the technical chapters.

Generally, the criteria for the cumulative schemes included within the cumulative effects assessment typically include the following:

- Development within 1km of the site that is subject to a planning application (and is either yet to be determined, have full planning consent or a resolution to grant), comprising either:
 - An uplift of more than 10,000 m2 (Gross External Area (GEA) of mixed-use floorspace), or over 150 residential units; Or
 - Any 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.

The criteria listed above have been set to allow all the schemes coming forward within the South Cambridge District Council and Cambridge City Council to be subject to an initial screening exercise to determine the schemes that, based on the scale of redevelopment (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 EIA.

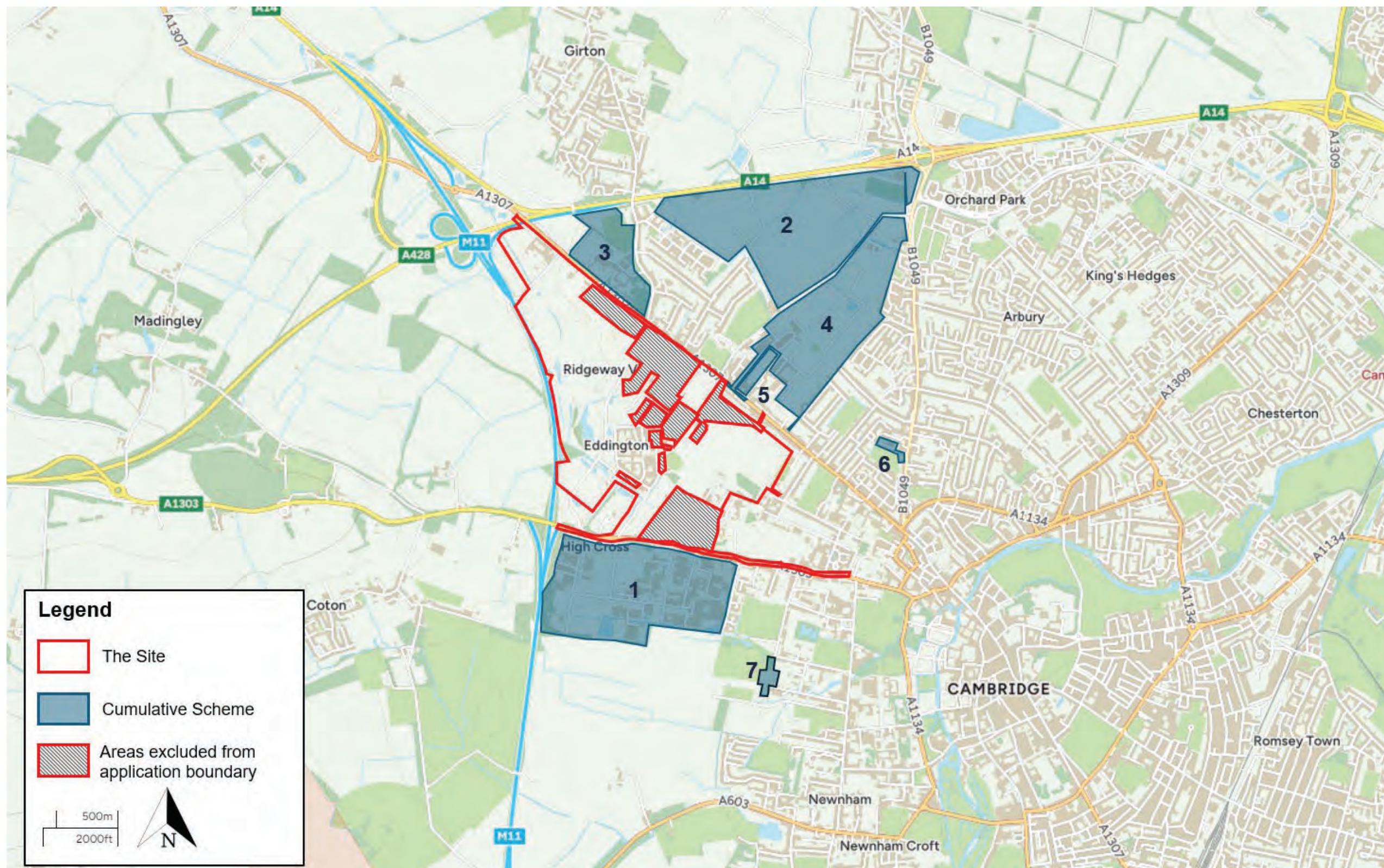
A map has been provided as Figure 8, which shows the approximate location of the cumulative schemes list in Table 3.

Table 3 Cumulative Schemes

No.	Address	Reference	Description	Status
1	West Cambridge Site Madingley Road Cambridge Cambridgeshire	16/1134/OUT	Outline planning permission with all matters reserved is sought for up to 383,300m2 of development comprising up to 370,000m2 of academic floorspace (Class D1 space), commercial/research institute floorspace (Class B1b and sui generis research uses), of which not more than 170,000m2 will be commercial floorspace (Class B1b), up to 2,500m2 nursery floorspace (Class D1), up to 4,000m2 of retail/food and drink floorspace (Classes A1-A5), up to 4,100m2 and not less than 3,000m2 for assembly and leisure floorspace (Class D2), up to 5,700m2 of sui generis uses, including Energy Centre and Data Centre, associated infrastructure including roads (including adaptations to highway junctions on Madingley Road), pedestrian, cycle and vehicle routes, parking, drainage, open spaces, landscaping and earthworks, and demolition of existing buildings and breaking up of hardstanding.	Approved 21 June 2024
2	Darwin Green Phases Two And Three Development Site Cambridge Road Impington Cambridgeshire	22/02528/OUT	Outline planning permission (all matters reserved except for means of access) for up to 1,000 residential dwellings, secondary school, primary school, community facilities, retail uses, open space and landscaped areas, associated engineering, demolition and infrastructure works	Application submitted May 2022 Appeal for non-determination Appeal Allowed 24 August 2024
3	Girton College Huntingdon Road Girton CB3 0JG	22/00887/OUT	Outline application for the construction of student residential accommodation together with ancillary meeting, office and social space (maximum 14700m2), auditorium (maximum 1300m2) replacement buildings and grounds maintenance workshops, one new and relocated sports pitch, additional ball-stop fencing, relocated tennis courts, a new vehicular access and replacement car park with some matters reserved except for access.	Awaiting Decision
4	Darwin Green Phase One Development Site Huntingdon Road Cambridge Cambridgeshire	07/0003/OUT	Mixed use development comprising up to 1593 dwellings, primary school, community facilities, retail units (use classes A1, A2, A3, A4 and A5) and associated infrastructure including vehicular, pedestrian and cycleway accesses, open space and drainage works.	Approved 18 December 2013
		14/0086/REM	Reserved Matters of 07/0003/OUT for access roads, pedestrian and cycle paths, public open space, services across the site and one allotment site.	Approved 19 June 2014 Under Construction
		15/1670/REM	Reserved Matters for 114 residential units and local centre including library, community rooms, health centre and retail units pursuant to outline consent 07/0003/OUT.	Approved 23 May 2016 Under Construction (Significantly Progressed)
		16/0208/REM	Reserved Matters Application for first housing phase (known as BDW1) including 173 dwellings with associated internal roads, car parking, landscaping, amenity and public open space.	Approved 27 May 2016 Completed
		21/03619/REM	Reserved Matters Application for fifth and sixth housing phases and Allotment 3 (collectively known as BDW5 and 6) including 410 dwellings and allotments with associated internal roads, car parking, landscaping, amenity and public open space.	Approved 22 December 2021

No.	Address	Reference	Description	Status
				Under Construction
		21/04431/REM	Reserved Matters Application for second housing phase (known as BDW2) including 323 dwellings with associated internal roads, car parking, landscaping, amenity and public open space.	Approved 26 July 2022 Under Construction
		21/05433/REM	Reserved Matters application for the fourth housing phase (known as BDW4) including 342 dwellings, with associated internal roads, car parking, landscaping, amenity and public open space.	Approved 22 December 2022 Under Construction
		21/05434/REM	Reserved Matters application for third housing phase (known as BDW3) including 210 dwellings with associated internal roads, car parking, landscaping, amenity and public open space.	Approved 27 April 2023 Not Commenced
5	National Institute of Agricultural Botany (NIAB) Huntingdon Road Cambridge Cambridgeshire CB3 0LE	21/03609/FUL	Retention of the former NIAB Headquarters building, the demolition of all other buildings and structures, and the erection of buildings with basements for 291 Build to Rent units (Use Class C3) including affordable housing and a 202 bed Apart-Hotel (Sui Generis) and associated facilities along with access, car and cycle parking, landscaping and infrastructure works.	Approved 2 February 2024
		23/04643/OUT	Outline application for the demolition of all site buildings and structures other than Chapter House and erection of buildings for a laboratory/office campus (Class E (g(i)) and (g(ii))) and associated facilities, cafe (class E(b)), access, car and cycle parking, revised access, car and cycle parking and refuse storage for the retained Chapter House with some matters reserved except for access, layout and scale.	Awaiting Decision
6	137 and 143 Histon Road Cambridge Cambridgeshire CB4 3HZ	24/01354/FUL	Erection of 70 dwellings including access, car parking, cycle storage, substation, landscaping and associated works.	Awaiting Decision
7	Grange Farm Site Land South Of Wilberforce Road Cambridge Cambridgeshire	21/02052/FUL	Demolition of existing buildings/structures and the erection of college accommodation comprising 39 townhouses with 245 student and academic staff bedrooms	Approved 1 March 2022 Under Construction

Figure 8 Cumulative Schemes Map *



AGRICULTURE AND SOILS

It is considered that there is the potential for likely significant effects relating to agriculture and soils and so this topic shall be **SCOPED IN** to the EIA. The agriculture and soil assessment will be undertaken by Reading Agricultural Consultants Limited.

The ES shall:

- Define the agriculture and soil resource baseline conditions;
- Identify relevant agriculture and soil receptors;
- Assess:
 - the potential for the loss of agricultural land, including that of the best and most versatile (BMV) quality, and the potential for the loss of or damage to the soils resources throughout the enabling, demolition and construction works;
 - the likely significant agriculture and soil effects;
 - any required mitigation or monitoring to address any likely significant adverse agriculture and soil effects; and
 - the potential for cumulative effects in relation to agriculture with other agreed upon schemes in the surrounding area.

Baseline Conditions

Current Baseline Conditions

Agricultural land in England and Wales is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose long-term limitations on its agricultural use. Grade 1 land is excellent quality agricultural land with no or very minor limitations to its agricultural use. Grade 5 is very poor quality land, with severe limitations due to adverse soil, relief, climate or a combination of these factors. Grade 3 land is divided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). The best and most versatile (BMV) land is defined as Grades 1 (excellent quality land), 2 (very good quality land) and 3a.

The site extends to approximately 131.5ha in total, of which approximately 37.5ha is in unused undisturbed permanent pasture and approximately 22.4ha is unused grassland, most of which looks to have been subject to previous disturbance. The remainder of the site is largely built out but also includes some open space, recreational ground and a large balancing pond.

A detailed soil and Agricultural Land Classification (ALC) survey was undertaken across the whole site in 2010. In total, 66 observations were made within the current site boundaries. The land was classified as mostly Subgrade 3a, with just under 6ha in the southern and eastern extents of the site classified as Grade 2 and around 4ha in the northern and western extent of the site classified as Subgrade 3b.

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.



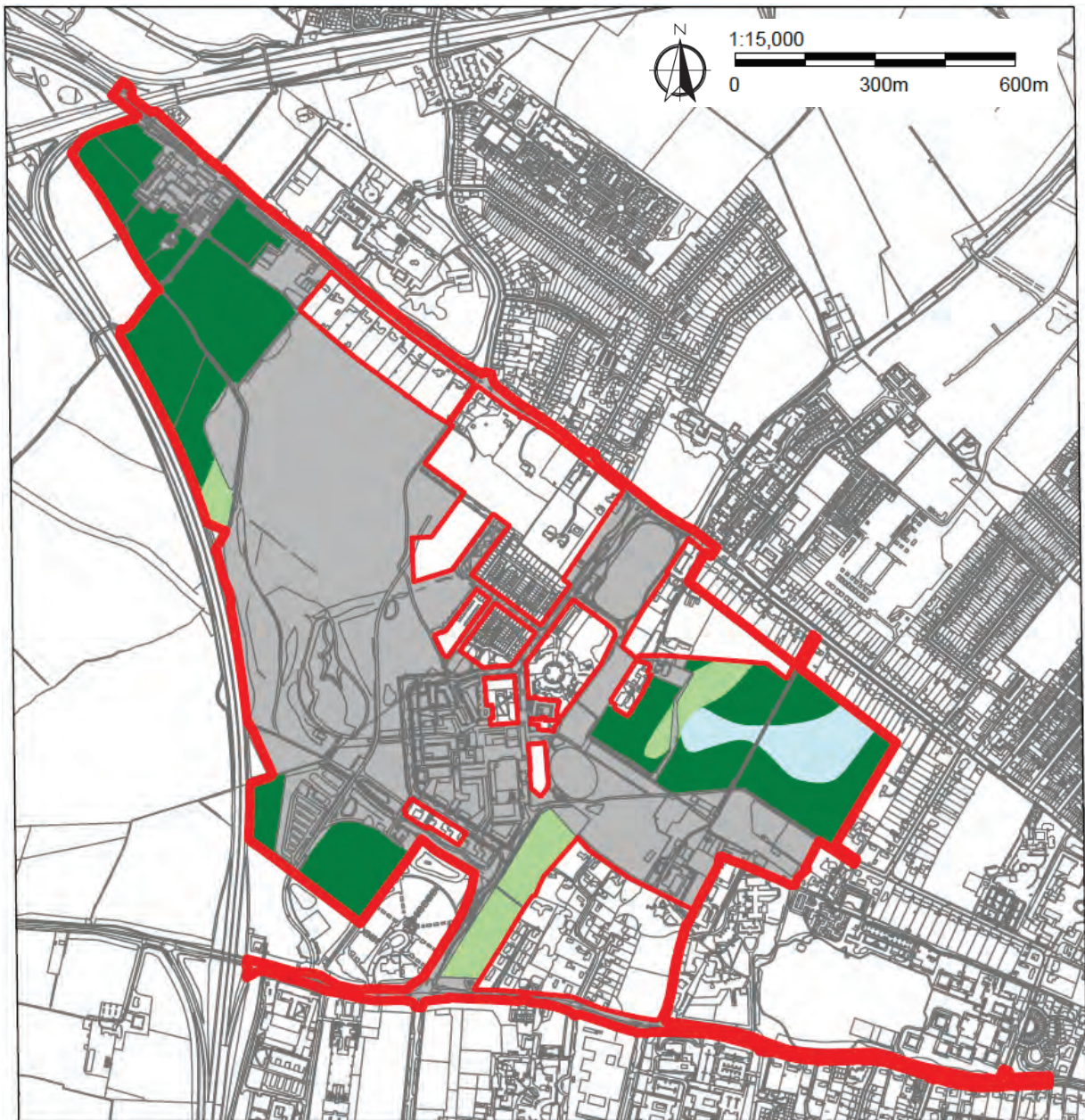
Future Baseline Conditions

Should the Proposed Development not proceed, there are no anticipated changes to the future agriculture baseline conditions of the site.

Receptors

The potential receptors are agricultural land, particularly that of BMV quality, and agricultural soils. The distribution of the land quality grades is shown in Figure 1.

Figure 1 Agricultural Land Quality



KEY

Grade 1		Grade 4	
Grade 2		Grade 5	
Subgrade 3a		Non-agricultural	
Subgrade 3b		Not present	



Potential Effects

Enabling, Demolition and Construction

The enabling, demolition and construction phase would result in the permanent loss of more than 50ha of BMV quality agricultural land, mostly of Subgrade 3a quality, with a small area of Grade 2.

During the construction phase, the soils would be subject to disturbance. Soils with a high clay content are most vulnerable to damage when being handled, therefore there is a potential for significant effects on this soil type during construction.

Completed Development

All effects on agricultural land and soils will occur during the enabling, demolition and construction phase. Therefore, there are no anticipated significant effects on agriculture following completion of the Proposed Development, and as such an assessment is scoped out of the ES.

Assessment Methodology

Basis of Assessment

The assessment will consider all the undeveloped land to be within the scope of agriculture and soils, even though the land has been taken out of agricultural production in the past decade. It is also considered that no residual agricultural use will continue following construction. In addition, it is noted that the site is allocated for development within the Cambridge Local Plan (2018) and South Cambridgeshire Local Plan (2018) and the site forms part of the wider North West Cambridge Development Masterplan redevelopment consented in 2013, which includes the development of this now out of use agricultural land.

Enabling, Demolition and Construction

The sensitivity of the agricultural land that would be affected is scaled according to its classification within the ALC system. The sensitivity of the soil resource is determined by its textural characteristics. The sensitivity of the agriculture and soil receptors is set out in Table 1.

Table 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

The magnitude of change to agricultural land will be related to the statutory consultation arrangements with Natural England for development involving agricultural land, whilst the magnitude of change on soil resources will take into account the continued ability of the soil to fulfil its primary ecosystem functions. The criteria for determining the magnitude of change to agriculture and soil receptors is set out in Table 2.

Table 2 Criteria for determining the magnitude of change

Magnitude	Land Take of Agricultural Land Area	Soil Resources
Large	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
Small	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

The significance of the effect on each receptor is then determined according to the standard significance matrix (i.e. moderate and major effects are considered significant).



Phasing

Impacts on agricultural receptors will occur during the enabling, demolition and construction stage, regardless of the phasing. Additionally, no receptors will be introduced as a result of the phasing of the Proposed Development. Therefore, an assessment of the phasing of the Proposed Development is not relevant to the assessment of effects on agriculture and soils.

Completed Development

No further effects on agriculture will occur once the Proposed Development is completed, therefore no further assessment of the complete and operational Proposed Development will be undertaken.

Cumulative Effects

The cumulative loss of agricultural land will be assessed, which will consider the cumulative schemes identified in **Annex C: Cumulative Schemes** as relevant.

AIR QUALITY

It is considered that there is the potential for likely significant effects relating to air quality and so this topic shall be **SCOPED IN** to the EIA. The air quality assessment will be undertaken by AECOM Ltd.

The ES shall:

- Define the air quality baseline conditions;
- Identify relevant human and ecological receptors;
- Assess:
 - the potential for dust and particulate matter impacts throughout the enabling, demolition and construction works and as a result of the completed development and resultant air quality effects;
 - the likely significant air quality effects;
 - any required mitigation or monitoring to address any likely significant adverse air quality effects and minimise and reduce any other adverse air quality effects; and
 - the potential for cumulative air quality effects with other agreed upon schemes in the surrounding area.

Baseline Conditions

Current Baseline Conditions

The site is located across the administrative boundary of South Cambridgeshire District Council (SCDC) and Cambridge City Council (CCC). Whilst SCDC has no designated Air Quality Management Areas (AQMA), 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 (NO₂) Air Quality Strategy (AQS) objective^{1,2}. The Proposed Development is located approximately 1.5 km from the boundary of this AQMA.

The latest published SCDC³ and CCC⁴ Air Quality Annual Status Reports and background pollutant concentrations maps provided by The Department for Environment, Food and Rural Affairs (Defra)⁵ have been considered for the current baseline conditions.

In 2022, SCDC undertook continuous air quality monitoring at three locations, of which two were situated at roadside locations, and the other was representative of urban background exposure. Non-automatic (passive) monitoring of NO₂ was additionally undertaken via diffusion tubes (DTs) at a network of 32 monitoring sites.

CCC undertook continuous monitoring at four sites in 2022, with an additional continuous monitoring site in CCC being managed as part of the Automatic Urban and Rural Network (AURN). CCC also measured NO₂ at 70 DT

¹ Defra (2019); ‘Clean Air Strategy’. Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770715/clean-air-strategy-2019.pdf

² Defra (2021); ‘AQMA Details’. UK-AIR. Available at: https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=353

³ South Cambridgeshire District Council (2023); ‘Air Quality Annual Status Report for 2022’

⁴ Cambridge City Council (2023); ‘Air Quality Annual Status Report for 2022’

⁵ Defra (2020); ‘Background Mapping data for local authorities – 2018’. Available at: <https://uk-air.defra.gov.uk/data/aqm-background-maps?year=2018>



locations. Neither SCDC or CCC has measured an exceedance of either of the NO₂ objectives (annual mean of 40µg/m³, hourly mean of 200µg/m³) over the most recently reported 5 years (2018-2022), suggesting that air quality in the area is good. Whilst CCC would normally be required to revoke their AQMA after 5 years with no exceedances, due to the uncertainty regarding the effects of the COVID 19 pandemic and restrictions on traffic and traffic related emissions, revocation has been delayed.

The most recently published monitoring data from SCDC and CCC at the time of assessment will be used to determine the baseline concentrations.

Baseline concentrations will also be modelled at part of the ADMS roads dispersion modelling assessment.

Future Baseline Conditions

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 2018 baseline data as the reference year, and provides projections of background concentrations of NO₂, PM₁₀ and PM_{2.5} from 2018 to 2030⁵.

The opening year of the Proposed Development will be used to provide future baseline conditions using Defra background mapping⁵.

Future year baseline conditions will also be modelled at part of the ADMS roads dispersion modelling assessment.

Potential Effects

Enabling, Demolition and Construction

The potential air quality impacts associated with the enabling, demolition and construction phase of the Proposed Development are considered to be:

- Fugitive emissions of particulate matter (dust, PM₁₀) from enabling, demolition and construction phase activities;
- Dust soiling associated with the enabling, demolition and construction phase; and
- Potential road traffic emissions associated with the enabling, demolition and construction phase.

On the basis of the above, it is proposed the following potential air quality enabling, demolition and construction effects are **scoped in** to the ES:

- Fugitive emissions of particulate matter (dust, PM₁₀) from construction phase activities;
- Dust soiling associated with the enabling, demolition and construction phase; and
- Road traffic emissions associated with enabling, demolition and construction phase activities, should construction phase traffic generation exceed threshold levels as indicated in the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK)'s land-use planning guidance⁶.

Completed Development

The potential air quality impacts associated with the operational phase of the Proposed Development are considered to be:

- Emissions from road vehicles during the operational phase; and
- Emissions from on-site energy centre (as relevant).

On the basis of the above, it is proposed the following air quality effects potentially caused by the Proposed Development once complete and occupied are **scoped in** to the ES:

- Emissions from road vehicles during the operational phase; and
- Emissions from on-site energy centre⁷ should combustion plant be proposed.

⁶ IAQM & EPUK (2017); 'Guidance on Land-Use Planning & Development Control: Planning for Air Quality'. Available at: <http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>

⁷ Details of the energy centre are not known at the time of writing (although will likely comprise heat pump-based heating solutions with a fully electrified development). Should the energy centre comprise gas-fired boiler and/or combined heat and power (CHP), detailed



Assessment Methodology

Basis of Assessment

The potential effect of the Proposed Development on local air quality will be discussed with regard to the following national and local guidance documents:

- Clean Air Strategy (2019)¹;
- Air Quality Standards Regulations (as amended) (2016)⁸;
- National Planning Policy Framework - Planning Practice Guidance (2024)⁹;
- IAQM and EPUK Guidance on land-use planning and development control: Planning for air quality (2017)⁶;
- Defra Local Air Quality Management Technical (LAQM) Guidance TG.22 (2022)¹⁰; and
- IAQM Guidance on the Assessment of dust from demolition and construction (2024)¹¹.

The assessment will include:

- Review of baseline air quality conditions in the vicinity of the Proposed Development;
- Qualitative demolition / construction dust risk assessment;
- Quantitative modelling of construction phase road traffic impacts at sensitive receptors (if required);
- Quantitative modelling of predicted operational impacts (road traffic and energy centre emissions (if required)) at sensitive receptors for NO₂ and particulates (PM₁₀ and PM_{2.5}); and a
- Site suitability assessment.

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. 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.

Receptors

Sensitive receptors will be identified from a review of aerial photography and OS mapping. A set of receptors will be selected from those identified to represent worst case exposure. Committed developments, included those within Phase 1 of the 2013 OPP, anticipated to be within the air quality study area during either the construction and/or operational phases will also be explicitly considered.

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. 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 and ecological receptors within 50m of the boundary are considered.

For the assessment of the operational phase, worst case sensitive receptors are identified within 200m of the affected road links. 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. 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 will also be considered.

As the Proposed Development is phased, new receptors will be introduced prior to the completion of the construction phase. These receptors will be considered within the dust risk assessment and road traffic modelling assessments.

modelling of energy centre emissions will be required. Should the energy centre be comprised of ground- or air-source heat pumps, or connected to district heating, effects from on-site energy generation can be scoped out.

⁸ H. M. Government (2016); 'Air Quality Standards Regulations (as amended) 2016'

⁹ Ministry of Housing, Communities and Local Government (2019); 'National Planning Policy Framework, Planning Practice Guidance: Air Quality'. Available at: <https://www.gov.uk/guidance/air-quality--3>

¹⁰ Defra (2022); 'Local Air Quality Management (LAQM) Technical Guidance 2022 (LAQM.TG(22))'. Available at:

¹¹ IAQM (2024); 'Guidance on the Assessment of Dust from Demolition and Construction.'



Enabling, Demolition and Construction

Dust impacts during the enabling, demolition and construction phases will be assessed by providing a qualitative assessment of the potential sources and effects, along with a risk assessment identifying those receptors most likely to be at risk. Suitable mitigation measures will then be proposed corresponding with the calculated risk. The risk assessment will be undertaken in line with IAQM guidance on the assessment of dust from demolition and construction activities¹¹.

If required, detailed modelling of construction phase road traffic emissions will be undertaken. This is necessary where traffic generated by construction of the proposed development meets the following criteria⁶:

- A change of Light Duty Vehicle (LDV) flows of:
 - more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA; or
 - more than 500 AADT elsewhere.

OR

- A change of Heavy Duty Vehicle (HDV) flows of:
 - more than 25 AADT within or adjacent to an AQMA; or
 - more than 100 AADT elsewhere.

Phasing

New receptors introduced by the Proposed Development would be assessed as appropriate in all parts of the ES chapter.

For the road traffic modelling assessments, impacts will be considered in the first full opening year and peak construction year (if required), as this is likely to be the worst-case situation of air quality.

The construction dust assessment will take into account the potential new receptors within the Proposed Development when considering the sensitivity of the area to impacts.

Completed Development

The requirement for detailed modelling of traffic emissions related to the complete and operational development would be scoped based on the criteria set out above.

If detailed modelling of road traffic emissions is required, the following road traffic scenarios will be considered in the assessment:

- Existing baseline conditions;
- Opening year 'without development' scenario, including committed developments; and
- Opening year 'with development' scenario, including committed developments.

The future baseline conditions will be determined once the opening year is known. Air quality is generally expected to improve with time, due (for example) to more stringent emissions standards for motor vehicles; thus, the likely evolution of the baseline conditions will be considered. The air quality assessment will use the predicted future air quality conditions as a baseline from which to determine the significance of the effects of the completed and operational Proposed Development.

The opening year 'without development' and 'with development' scenarios will include vehicle trips associated with general growth from the baseline situation. The opening year 'with development' scenarios will also include additional (or re-routed) traffic associated with the Proposed Development.

One year of hourly sequential meteorological data (corresponding with the baseline year of assessment) from an appropriate met site will be used.

The assessment also will consider the suitability of the site for the proposed use. The acceptability of air quality conditions experienced by future occupants of the Proposed Development will be assessed in accordance with the methodology and criteria set out above for the assessment of the impacts of the completed development on existing air quality (constituting an assessment of site suitability). If conditions are found to exceed the statutory air quality objectives, mitigation measures will be recommended, as relevant, to ensure future occupants are exposed to acceptable air quality.



Should combustion plant be proposed as part of the energy strategy (including emergency generators), an appropriate assessment would be carried out. The scale and approach of this assessment would be designed dependant on the scale and type of energy plant proposed. Initially, the impacts will be assessed qualitatively based on the proposed size, location and emissions performance and the proposed testing schedule. Where it is not possible to discount potentially significant contributions to NO₂ concentrations based on the schedule, a more detailed assessment will be conducted.

Cumulative Effects

As per the Traffic and Movement Topic Sheet, the road traffic cumulative assessment will consider the additional flows from surrounding committed development against the future baseline condition.

The cumulative demolition/construction dust effects of the Proposed Development and cumulative schemes will be considered based on the IAQM Guidance for assessing impacts from construction activities. The DRA assumes that following the implementation of the relevant mitigation measures, any impacts will be temporary and negligible. Assuming cumulative schemes follow the appropriate guidance, cumulative impacts will be limited. However, measures can be included which require liaison with other significant construction sites to limit cumulative effects. This will also be addressed through the CEMP and DMP.

With regards to combustion plant sources, a review of nearby cumulative schemes will be undertaken to determine the cumulative impacts of any combustion plant sources

As the development is phased, new receptors introduced as part of the development will be considered at all stages of the assessment.

Assessment Criteria

The overall significance of air quality effects will be described based on the approach outlined in the IAQM and EPUK guidance⁶. In determining the overall significance of effects, reference will be made to the predicted magnitude of change in air quality relative to the normal inter-annual variations expected around the Proposed Development, and relevant planning policy.

Mitigation and Monitoring

Where necessary, mitigation and monitoring measures will be recommended for each development phase to reduce air impacts at sensitive locations within and around the site. Mitigation requirements will be determined based on an evaluation of the results of the air quality assessment, a review of source apportionment of pollutants (i.e. background contributions, road sources and energy centre), the location of existing receptors to local pollutant sources and relevant planning policy.



BUILT HERITAGE

It is considered that there is the potential for likely significant effects relating to built heritage receptors and so this topic shall be **SCOPED IN** to the EIA. The assessment will be undertaken by Stantec UK Limited.

The Built Heritage ES chapter shall:

- Define the Built Heritage baseline conditions;
- Identify relevant built heritage receptors
- Assess:
 - Sensitivity of receptors based on statutory designation, or in the absence of designation, professional judgement against values set out in Historic England's Advice Note 12;
 - Development impacts and hence the significance of environmental effects arising from the proposals during the construction phase and operation/completed phase, including effects on the historic character and setting of built heritage receptors where relevant;
 - Any mitigation measures that would reduce or offset any adverse effects;
 - Any residual effects (those that might remain after mitigation) and, where required, cumulative effects.

Baseline Conditions

Current Baseline Conditions

The site is located to the north west of Cambridge within the administrative district of the Greater Cambridge Shared Planning Service. The site covers an area of approximately 131.5ha.

Designated heritage receptors may include Scheduled Monuments, Listed Buildings, Registered Parks and Gardens and Conservation Areas. A desk-top 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. These are shown on Figure 1 (**N.B** the Howes Place Conservation Area has not yet been mapped on the data sources).

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 designated built heritage receptors located within the site boundary.

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. This is considered appropriate given the lower level of significance 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.

Future Baseline Conditions

No future changes to the baseline conditions of the built heritage receptors themselves are anticipated. Phase 1 of the development of the previously approved Outline Planning Permission (OPP) (11/1114/OUT and S/1886/11) is under construction and several areas within the wider site have been cleared. 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 will include the build out of relevant identified cumulative schemes as agreed with the Local Planning Authority.

Receptors

A review of the OPP and relevant data sources has been undertaken in order to inform this EIA Scoping Report. The designated built heritage receptors in Table 1 have been identified within the 750m study area as having potential to experience an impact from the Proposed Development. The presence of these receptors within the study area does not indicate an immediate sensitivity to development, but this is a starting point to identify the potential sensitivity and impacts that may be experienced as a result of the Proposed Development. These will be fully scoped and assessed as relevant within the built heritage ES chapter and accompanying technical appendix.

Table 1 Designated Built Heritage Receptors Within 750m Study Area

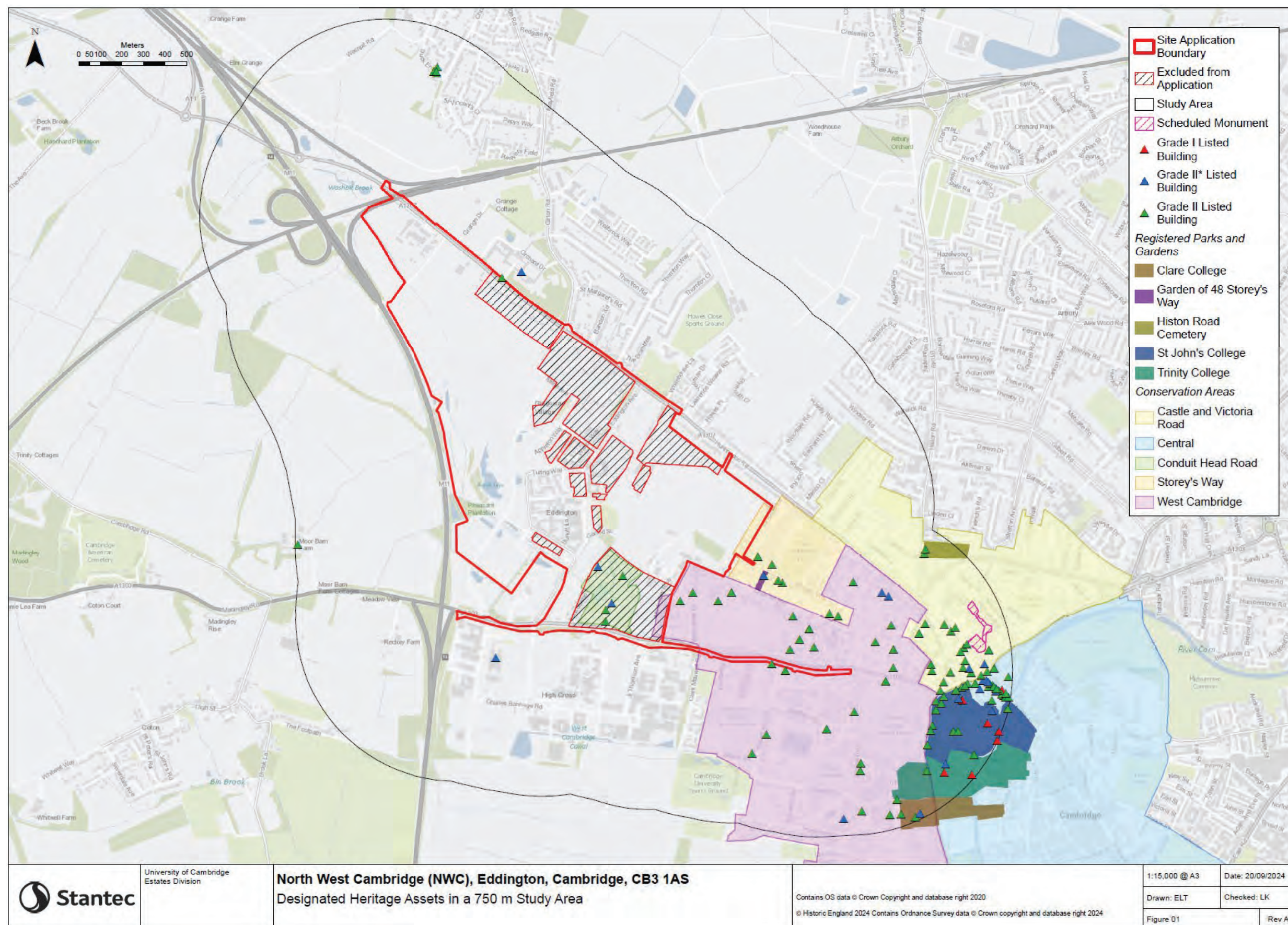
Receptor Name	Grade	Historic England List Entry No
Girton College	II*	1331334
Lodge, Girton College	II	1127293
Shawms	II*	1268363
Spring House	II	1380900
Willow House	II*	1331936
Salix	II	1227614
White House	II	1126037
Schlumberger Gould Research Centre and attached perimeter wall to the north	II*	1438644
Northumberland dome at the Observatory	II	1126157
The Observatory	II	1126156
Chapel, Churchill College	II	1331925
Research Flats	II	1331924
30 Storey's Way	II	1343647
29 Storey's Way	II	1331882
48 Storey's Way	II	1126090
54 Storey's Way	II	1126091
56 Storey's Way	II	1068856
76 Storey's Way	II	1268347
63 Storey's Way	II	1268346
3 linked residential courts due west of Central buildings of Churchill College	II	1227711
Central Buildings Churchill College	II	1227706
Wolfson Hall, Bracken Library and Bevin Rooms, Churchill College	II	1126008
4 linked residential courts due southwest of Central Buildings of Churchill College	II	1126007
3 linked residential courts due south of Central Buildings of Churchill College	II	1373886
House and Brock Brothers' Studio	II	1331872
31 Madingley Road	II	1268371
Fitzwilliam College, New Court	II	1489406
Fitzwilliam College, Chapel	II	1489402



Receptor Name	Grade	Historic England List Entry No
Fitzwilliam College, Central Hall Building	II	1489400
The Grove	II	1235123
Kerbstones to pool in courtyard to west of Hall, New Hall	II*	1227647
Murray Edwards College (formerly New Hall)	II*	1331922
Chapel of St Edmund's House (Roman Catholic)	II	1083566
Elterholm, 12 and 12a Madingley Road	II	1422165
Gates and railings of Cambridge General Cemetery flanking Histon Road	II	1099097
Lodge of Cambridge General Cemetery	II	1126200
9 Wilberforce Road	II	1268352
Emmanuel College Sports Pavilion, including Groundsman's House and stable	II	1422595
Moor Barns Farmhouse	II	1163483
Jesters	II	1164144
8 Duck End	II	1127334
Water Pump	II	1331314
3, 5, and 7 Duck End	II	1317929
Histon Road Cemetery	II* Registered Park and Garden	1001569
Garden of 48 Storey's Way	II Registered Park and Garden	1422759
Conduit Head	Conservation Area	N/A
Storey's Way	Conservation Area	N/A
West Cambridge	Conservation Area	N/A
Howes Place	Conservation Area (Jan 24)	N/A



Figure 1 Designated Heritage Assets within 750m of the Site





The non-designated built heritage receptors with potential to experience an impact from the Proposed Development have been identified within a 250m study area and shown in Table 2.

Table 2 Non-Designated Built Heritage Receptors Within 250m Study Area

Receptor Name	Local List Reference
52 Storey's Way	BLI 0401
25 Storey's Way	BLI 0398
44 Storey's Way	BLI 0400
34 Storey's Way	BLI 0399
Mortuary Chapel of All Souls, All Souls Lane	BLI 0004
141 Huntingdon Road ('Wayside', Storey's Way)	BLI 0176
143-145 Huntingdon Road	BLI 0177
136 Huntingdon Road	BLI 0174
138 Huntingdon Road	BLI 0175
162 Huntingdon Road	BLI 0178
171 Huntingdon Road	BLI 0179
173 Huntingdon Road	BLI 0180
183 Huntingdon Road	BLI 0181
National Institute of Agricultural Botany (NIAB), Huntingdon Road	BLI 0171
Conduit Rise, Conduit Head Road	BLI 0089
Clements End, Conduit Head Road	BLI 0088

Potential Effects

The design of the Proposed Development is evolving at this stage, such that the impacts on built heritage receptors is uncertain. However, the previously prepared Environmental Statement (ES) for the OPP concluded that there was potential for several designated built heritage receptors to experience a likely significant effect. As such, there remains potential for the built heritage receptors to experience a likely significant effect, and this will be confirmed through a robust assessment once the proposed design has been finalised.

Assessment Methodology

The objectives of the assessment are to:

- Describe the sensitivity of the identified built heritage receptors within the agreed study area (750m for designated, and 250m for non-designated receptors), by appraising their value and the contribution of setting to that sensitivity;
- Identify the magnitude of impact on the identified built heritage receptors arising from the Proposed Development;
- Identify mitigation to avoid or minimises adverse impacts, where possible, in a way that meets the requirements of the National Planning Policy Framework 2023 (NPPF);
- Determine the scale of effect based on the sensitivity and magnitude of impact experienced by the identified built heritage receptors;
- Assess the Proposed Development's effects on the value of heritage receptors, including taking into consideration any mitigation proposed when assessing the significance of the Proposed Development's residual effects; and
- Assess the cumulative effects of the Proposed Development in conjunction with other relevant cumulative developments.

The assessment will be guided by best practice guidelines, including the NPPF and Planning Practice Guidance (PPG), Historic England guidelines, local planning authority guidance and other guidance from statutory and non-statutory bodies where applicable, including:

- Relevant legislative and policy requirements, including local plan policies and NPPF,
- Principles of Cultural Heritage Impact Assessment in the UK (IEMA, IHBC, CiFA, 2021)¹;
- Guidance and Toolkit for Impact Assessments in a World Heritage Context (UNESCO, 2022);²
- Conservation Principles, Policies and Guidance (Historic England, 2008)³; and
- Historic Environment Good Practice Advice in Planning, Note 3: The Setting of Heritage Assets, Second Edition (Historic England, 2017) ('GPA3')⁴.

The baseline information will examine the following:

- A site walkover survey.
- Relevant national and local planning policy;
- Relevant guidance found in the NPPF and PPG; and
- Historical background (including published and unpublished sources), drawn from a variety of sources including the LDC Local Plan.

Basis of Assessment

The assessment of the outline planning application will be based on the maximum parameters for development, once established. It will also consider the findings of the Landscape and Visual Impact Assessment, as relevant to built heritage, including consideration of relevant views. The assessment of impact will include any mitigation measures embedded within the outline application as well as any secondary mitigation measures to be secured by condition or delivered through reserved matters applications.

Enabling, Demolition and Construction

The likely temporary construction effects on built heritage receptors, being short to medium-term, are likely to be less significant than the permanent effects during the operational phase of the Proposed Development. Measures proposed to prevent, reduce or where possible offset any significant adverse effects will be identified and developed as part of the design process and identified within the ES chapter. The design mitigation is likely to include careful planning, the siting, access, layout and scale of any necessary buildings, at each project phase. How mitigation will be appropriately secured will also be addressed.

Phasing

Construction phasing is anticipated to be over a period of approximately 10 years. Once confirmed, this will be considered in relation to the identified built heritage receptors, where relevant.

Completed Development

The completed development assessment will be based on a single fully built out scenario. There is potential for indirect effects during the operational phase on the setting of all built heritage receptors within the study area. For those receptors that will be affected, the effects will be appraised in terms of changes (if any) caused to their setting.

¹ https://www.archaeologists.net/sites/default/files/j30361_iema_principlesofchia_v8.pdf

² <https://historicengland.org.uk/content/documents/advice/he-briefing-unesco-guidance-toolkit-hia-2022>

³ <https://historicengland.org.uk/advice/constructive-conservation/conservation-principles/>

⁴ <https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/>



Cumulative Effects

An appropriate assessment of potential cumulative impacts associated with relevant cumulative schemes, suitable mitigation, how these measures will be secured, and consequently likely residual impacts will be provided.



ECOLOGY AND BIODIVERSITY

It is considered that there is the potential for likely significant effects relating to ecology and biodiversity and so this topic shall be **SCOPED IN** to the EIA. The ecology and biodiversity assessment will be undertaken by MD Ecology.

The ES shall:

- Define the ecology and biodiversity baseline conditions;
- Identify relevant ecology and biodiversity receptors;
- Assess:
 - the potential for ecology and biodiversity impacts throughout the enabling, demolition and construction works and as a result of the completed development and resultant ecology and biodiversity effects;
 - the likely significant ecology and biodiversity effects;
 - any required mitigation to address any likely significant adverse ecology and biodiversity effects; and
 - the potential for cumulative effects in relation to ecology and biodiversity with other agreed upon schemes in the surrounding area.

Baseline Conditions

Current Baseline Conditions

The ecology and biodiversity ES chapter will be based on baseline conditions derived from a range of sources, including a review of existing ecological information from the 2012 ES, ecological surveys and monitoring that have taken place at the Proposed Development site between 2012 and 2023 inclusive to inform reserved matters applications for Phase 1 development lots and to determine the effectiveness of mitigation and enhancement measures, an updated desk study undertaken during 2024, and a suite of updated ecological surveys undertaken during 2024 and 2025.

The updated desk study was undertaken during March 2024 and comprised:

- 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.



The following update ecological surveys have already been completed or commenced during 2024, or are proposed to be completed in advance of submission of the planning application, which will support the ecology and biodiversity assessment undertaken as part of the ES:

- Detailed habitat mapping of the site using both Phase 1 Habitat Survey categories and UKHAB categories, along with condition assessments suitable to inform a Biodiversity Net Gain (BNG) assessment;
- 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;
- A search for notable and Invasive Non-native Species (INNS) of plants;
- A River Condition Assessment (RCA) of the Washpit Brook to inform a BNG assessment;
- A walkover survey to assess the value of the site for invertebrates and identify any notable species encountered;
- 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, and subsequent population size class assessments for GCN in the ponds where this species has been recorded;
- Toad surveys of the lagoon at Brook Leys and large ponds within 500m of the site;
- Reptile surveys of selected areas as a representative sample of the most valuable habitats present for this species group;
- A breeding bird survey of the site following current good practice guidance;
- A wintering bird survey of the site following current good practice;
- An assessment of the suitability of trees and buildings for use by roosting bats, and an internal inspection/Preliminary Roost Assessment of suitable buildings, with follow up dusk emergence surveys where required;
- Detailed bat activity surveys across the site through 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 2 in the eastern part of the site and at least 2 in the western part of the site); the bat activity surveys commenced in August 2024 and are due to be completed in July 2025;
- Mapping and classification of badger setts;
- An initial sampling search for harvest mouse nests in the most valuable habitats present for this species;
- A targeted water vole survey of all wetland habitat, following current good practice guidance; and
- A targeted search for otter holts with detailed camera-trapping at any potential otter holts identified, following emerging good practice guidance.

At this stage no targeted surveys are proposed for invertebrates based on the nature of the habitats that would be impacted by the Proposed Development, which comprise rank grassland that has become established in areas of abandoned farmland. There are likely to be minimal impacts on the more valuable habitats present that are considered as receptors for this assessment.

Brown hare and hedgehogs are known to be present and there are no suitable survey methods that will allow an assessment of population size; further surveys for these species are therefore not proposed.

The general scope of ecological surveys was discussed with Guy Belcher at a meeting held on 8 July 2024. A note from the meeting is provided within **Annex F: Ecology Consultation** of this EIA Scoping Report.

Future Baseline Conditions

Where relevant to the assessment, possible future changes to baseline conditions will be predicted based on available 'historical' information from ecological surveys undertaken at the site since 2004. The data available allow an understanding of how habitats and species populations have changed at the site as a result of:

- Construction activities associated with adjacent (Phase 1) development plots;



- Changes in management, following cessation of farming within the majority of the site, immediately prior to Phase 1;
- Increased use of the site by people for informal recreation; and
- The creation of new habitats through landscape planting.

Observed changes and trends will be used to predict possible future changes to the baseline in so far as they are relevant to the assessment, given that enabling, demolition and construction impacts associated with the Proposed Development will be phased.

Receptors

Designated Sites

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.

A Habitats Regulations Assessment (HRA) Screening letter was issued to GCSP on 18 July 2024, which concluded that no adverse impacts on the Eversden and Wimple Woods SAC are anticipated as a result of the Proposed Development, and therefore a HRA is not required. GCSP provided a response on 7 October 2024 which confirmed that not HRA is required to support the planning application. The HRA Screening letter and response are provided in **Annex F: Ecology Consultation** of this EIA Scoping Report.

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.

Madingley Wood SSSI is located off-site, 1.8km to the west and on the opposite side of the M11 Motorway. 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 will therefore not be considered as a receptor in this assessment, although it does support roosting barbastelle bats which will be considered further (see below).

The Proposed Development is not located within the IRZ of any other SSSIs.

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.

There are several non-statutory designated nature conservation sites within 2km of the Proposed Development. None are located within the site, although three City Wildlife Sites are located adjacent to, or within very close proximity to the boundary and could potentially be affected by the Proposed Development: Ascension Parish Burial Ground, Bird Sanctuary, Conduit Head and Scrub East of M11 Verge.

In summary, the following designated nature conservation sites will be included as receptors in the ecology and biodiversity ES chapter:

- Ascension Parish Burial Ground City Wildlife Site;
- Bird Sanctuary, Conduit Head City Wildlife Site; and
- Scrub East of M11 Verge City Wildlife Site

Habitats

The assessment will focus on any Habitats of Principal Importance for the Conservation Biodiversity in England (HPIs) or protected habitats that are present within the site or sufficiently close to be potentially affected, any habitats that meet the criteria for designation as a statutory or non-statutory designated nature conservation site, and any habitats considered to be of importance in a local context. At this stage the following habitats are likely to be included as receptors in the ecology and biodiversity ES chapter:

- Veteran oak tree;



- Washpit Brook;
- Ponds;
- Woodlands;
- Hedgerows;
- Other wildlife corridors; and
- Wildflower meadow.

Other habitats may also be included as receptors, dependent on the outcomes of the proposed update surveys.

Species or Species Groups

The following species or groups of species are likely to be included as receptors in the ecology and biodiversity ES chapter, although this will be confirmed following completion of further surveys and analysis of data gathered during 2024. Where a species or species group is not included within the assessment presented within the ES chapter, reasonable justification will be provided within the ES chapter. Where the ongoing surveys confirm the presence of any other SPIs or protected species (e.g. harvest mice or reptiles) these will also be included as receptors.

- Invertebrates – impacts on this group will be considered based on the habitats being affected and the results of the walkover survey and available desk study information.
- Great Crested Newts – this species is known to be present in off-site ponds (Madingley Road Park and Ride and the Bird Sanctuary, Conduit Head City Wildlife Site) as well as two new ponds created on site as part of Phase 1. It is a European Protected Species (EPS) and is listed as a SPI.
- Barn owls – this species has been recorded nesting within the site and is also likely to forage within it (the nest location has not been specified here and will be kept confidential). It is protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA).
- Skylarks – this species breeds within the western half of the site in the areas of abandoned former farmland. It is listed as a SPI and is unlikely to continue to use the site extensively following completion of the Proposed Development.
- Other Bird Species of Conservation Concern – a number of other 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. It is likely that the different species using the site will be grouped by habitat association for the purposes of the assessment. Additional species may be included dependent on the outcomes of the proposed wintering bird surveys.
- Bats – the assessment will focus on bat species found to be roosting on site, and those species using the site for foraging or commuting purposes that are listed as SPIs (likely to be brown long-eared, soprano pipistrelle, noctule and barbastelle).
- Water Voles – this species is known to be present within wetland habitat throughout the site. It is protected under the WCA and is listed as a SPI.
- Otters – otters have been recorded using the site on occasion since the new lagoon at Brook Leys was completed as part of Phase 1. Further surveys are in progress to determine whether any holts are present on site. Otters are an EPS and listed as a SPI.
- Badgers – there are numerous badger setts present within the site (the locations have not been specified here and will be kept confidential). Badgers are protected under the Protection of Badgers Act 1992.
- Brown Hares – this species occurs in the western part of the site and is listed as a SPI.
- Hedgehogs – this species is known to occurs in the eastern part of the site and is listed as a SPI.

Potential Effects

Enabling, Demolition and Construction

The assessment will consider the impacts of habitat loss, habitat or population fragmentation, dust deposition, reduction in water quality through pollution/increased sedimentation, disturbance associated with construction activities, lighting during construction, damage or destruction of breeding or resting sites of protected species,



and the risk of killing or injuring protected species. The assessment will consider whether any impacts could be made worse by the phased nature of the Proposed Development; where this is the case the assessment of effects will be based on the worst-case scenario.

Completed Development

The assessment will consider the impacts of habitat degradation and disturbance through changes in management, increased recreational pressure, reduction in water quality and increased use of artificial lighting.

Assessment Methodology

The assessment used in the ecology and biodiversity ES chapter will follow current good practice guidance on Ecological Impact Assessment published by the Chartered Institute of Ecology and Environmental Management (CIEEM). The guidelines define a significant effect as one that either supports (significant beneficial) or undermines (significant adverse) biodiversity conservation objectives for important ecological features or for biodiversity in general. Important ecological features are those of relevance to the decision-making process; in this context that effectively includes designated nature conservation sites, HPis, SPIs, or habitats / species listed as being of nature conservation importance in other published sources, protected species and INNS. The receptors (and potential receptors) covered by this assessment fall into one or more of these categories.

The assessment will be based on baseline information for each receptor, the design of the Proposed Development taken from a worst-case scenario interpretation of the Parameter Plans (e.g. the maximum extent of development), and an understanding of the biophysical changes likely to result for each receptor. This will be informed by relevant good practice guidance and the results of ecological monitoring during and following Phase 1.

Any of the potential receptors listed above considered unlikely to be significantly affected will be scoped out of the assessment, with justification provided as relevant within the ES chapter.

The geographic scale of importance of each receptor will be assessed, based on available national and local contextual information.

The impacts on each receptor will be identified and characterised, and mitigation measures will be proposed as relevant. The overall effect of the Proposed Development including mitigation measures will be predicted and the significance of the predicted residual effect will be assessed as 'likely to be significant' or 'not likely to be significant', based on the definition of significant effects set out above. The significance of the effect will be presented in terms of the geographic scale of importance of the affected receptor.

Compensation measures will be proposed for any residual significant effects.

The assessment will set out the enhancement measures that the Proposed Development will deliver at detailed design stage, and how these will be secured.

The effect of the Proposed Development on biodiversity in general will be assessed through a BNG assessment following the most up-to-date version of the DEFRA metric.

Cumulative Effects

The cumulative effects arising from the Proposed Development and a defined list of other projects (see **Annex C: Cumulative Schemes**) will be assessed using the approach described above, to determine whether any such effects would be considered to be significant.

Biodiversity Net Gain Assessment

A Biodiversity Net Gain (BNG) Assessment of the Proposed Development will also be submitted with the planning application. This will follow the current version of the DEFRA metric (most recently updated in July 2024).

Other Ecology Planning Deliverables

Reports presenting the outcomes of updated desk study and ecological surveys will be provided as appendices to the ES.

The ecological enhancement measures to be implemented as part of the Proposed Development will be detailed in a draft Ecological Enhancement Plan, submitted as part of the planning application.



The BNG Report and Ecological Enhancement Plan will supersede the existing site-wide Biodiversity Strategy that was approved under a condition of the Outline Planning Permission 2013 in relation to the Site.

An Arboricultural Impact Assessment will be submitted alongside the planning application.

GROUND CONDITIONS AND LAND CONTAMINATION

It is considered that there is the potential for likely significant effects relating to Ground Conditions and Land Contamination and so this topic shall be **SCOPED IN** to the EIA. The Ground Conditions and Land Contamination assessment will be undertaken by AECOM Ltd.

The ES shall:

- Define the ground conditions and land contamination baseline conditions;
- Identify relevant ground conditions and land contamination receptors;
- Assess:
 - the potential for ground conditions and land contamination impacts throughout the enabling, demolition and construction works and as a result of the completed development and resultant ground conditions and land contamination effects;
 - the likely significant ground conditions and land contamination effects;
 - any required mitigation or monitoring to address any likely significant adverse ground conditions and land contamination effects; and
 - the potential for cumulative effects in relation to ground conditions and land contamination with other agreed upon schemes in the surrounding area.

Baseline Conditions

A Phase 1 Preliminary Risk Assessment (PRA) will be undertaken (to be appended to the Ground Conditions and Land Contamination ES chapter), which will assess the baseline conditions for the Proposed Development in detail. The PRA will:

- Undertake a review of the site's geological, hydrological and hydrogeological setting, and available geo-environmental information relating to the site and surrounding;
- Undertake a review of historical land uses for the site and surrounds with emphasis on identifying potential on-site and off-site contamination sources;
- Undertake a review of existing investigation reports for the site; and
- Preparation of a report including a conceptual site model with a view to identifying any significant source-pathway-receptor linkages followed by a qualitative risk assessment.

The baseline conditions described in the following sections are based on the information and data obtained from the following sources:

- Groundsure Report (ref: GS-P22-D3Z-URC-Z1V);
- British Geological Survey (BGS) 1:50 000 scale geological map Sheet 188 (Cambridge);
- BGS Onshore GeoIndex Online Viewer; and
- Defra MAGIC Interactive Map.



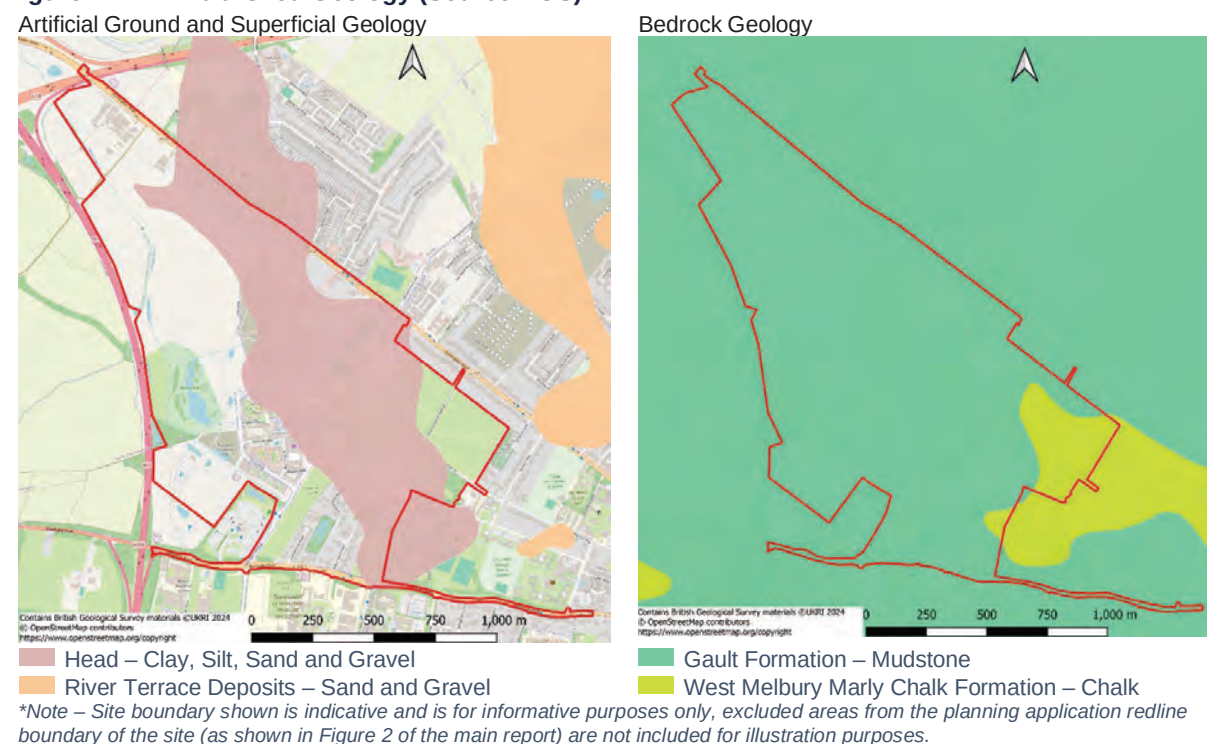
Published Geology

The British Geological Survey (BGS) 1:50 000 scale geological map Sheet 188 (Cambridge) and BGS Onshore GeoIndex viewer have been reviewed to assess the underlying geology at the site, as shown in Figure 1.

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 in part by Head deposits as shown in Figure 1. River Terrace Deposits are shown to be present to the east of the site;
- 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 southeast of the site; and
- There are no mapped faults or linear geological features within the site boundary.

Figure 1 Published Geology (Source BGS)



Hydrology and Hydrogeology

The surface water feature onsite is the Washpit Brook, which flows north in the western part of the site. There are several ponds (including Brook Leys), ditches and drains within the fields on site. The key surface watercourse in the vicinity of the Proposed Development is the River Cam located approximately 800m to the south-east of the site and flows in the north-westerly direction.

The Groundsure Report indicates that there are no active or historic licensed surface water abstractions within 500m of the site boundary. There are two licensed surface water abstraction points within 1000m of the site. One of these licenses is active, while the other is historical. The nearest active license is located 647m southeast of the site and involves water abstraction from Bin Brook for heat pump use.

The Head superficial deposits present on site 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 across most of the site is classified as an unproductive aquifer, while the West Melbury Chalk Formation is classified as a Principal aquifer.

The Groundsure Report indicates that there are no active or historic groundwater water abstractions within 500m of the site boundary. There are five licensed groundwater abstraction points within 1000m of the site, all of which



are historical. There are no source protection zones or potable water abstraction license within 1000m of the site boundary.

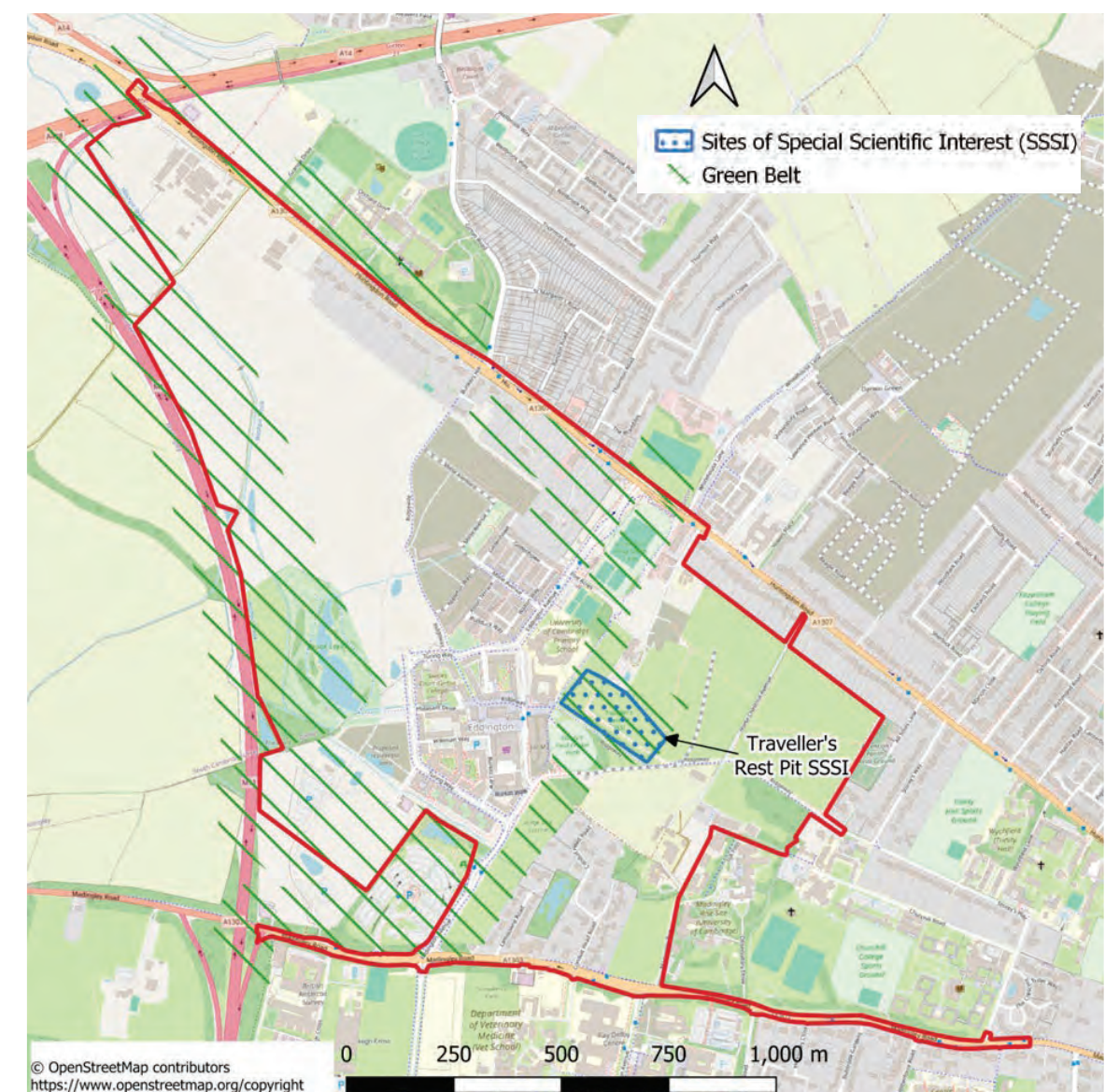
Sensitive Land Uses

The Groundsure Report identifies adjacent sensitive land use based upon factors such as Sites of Special Scientific Interest (SSSI), Environmentally Sensitive Areas, Areas of Outstanding Natural Beauty, World Heritage sites, Nature Reserves, National Parks, Nitrate Sensitivity Areas/Vulnerability Zones, and Special Protection Areas.

The sensitive land uses identified within the site boundary are shown in Figure 2 and summarised here:

- Traveller's Rest Pit SSSI located in the area south of Huntingdon Road and North of Garrod Street. The indicative boundary of the site is also identified in the North West Cambridge Action Plan (Adopted October 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; and
- Green Belt Areas designated to prevent urban sprawl by keeping land permanently open.

Figure 2 Sensitive Land Uses (Source: Groundsure Report)



*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 2 of the main report) are not included for illustration purposes.



Potential Sources of Contamination

The potential sources of contamination identified from historical Ordnance Survey maps within and around the Proposed Development 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.

Future Baseline Conditions

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 Ground Conditions and Land Contamination ES chapter will outline the state of the baseline conditions including identification of any new receptors if the Proposed Development were to be implemented.

Receptors

The sensitive receptors associated with ground conditions and land contamination, which will be assessed in the ES are:

- Future site users;
- Construction and maintenance workers;
- Nearby site users;
- Groundwater (Principal aquifer within the West Melbury Marly Chalk Formation);
- Surface water (Washpit Brook and River Cam);
- Traveller's Rest Pit SSSI site and
- Building and development infrastructure.

Potential Effects

The Proposed Development has the potential to affect ground condition and land contamination receptors during both construction and operational phases of the Proposed Development. The Ground Conditions and Land Contamination ES chapter will assess the potential for likely significant effects (beneficial and adverse) arising from the construction and operation of the Proposed Development.

Enabling, Demolition and Construction

The potential impacts prior to implementation of mitigation measures during the enabling, demolition and construction phase of the Proposed Development 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.

As required by the North West Cambridge Area Action Plan, the Traveller's Rest Pit SSSI site will be safeguarded and protected as part of the 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

The potential effects of ground conditions and land contamination will be considered against the phasing of the 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 development.

Completed Development

The potential impacts prior to implementation of mitigation measures during the operational phase of the Proposed Development are 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.

Assessment Methodology

The proposed assessment methodology will be in line with the following guidance documents and standards:

- Environment Agency (2023) Land Contamination Risk Management (LCRM) guidance;
- Department for Environment Food & Rural Affairs (2012) Environmental Protection Act 1990: Part 2A – Contaminated Land Statutory Guidance;
- IEMA (2021) A New Perspective on Land and Soil in Environmental Impact Assessment;
- Highways England (2019) DMRB LA 109 Geology and Soils; and
- 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).

The general approach outlined within the EA (2023) LCRM guidance will be adopted for assessing risks from land contamination. The PRA report will include a conceptual site model (CSM), using the source-pathway-receptor approach to identify potential significant contaminant linkages. This report will be appended to the ES chapter.

The ES chapter will identify and assess 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.

The sensitivity of the receptors and the magnitude of potential impacts during construction and operational phases will be assessed using an approach which is broadly based on the established methodology from the Highways England (2019) DMRB LA 109 Geology and Soils. The effect significance (adverse or beneficial) of each impact will determine whether mitigation measures will be required. Mitigation measures will subsequently be identified (where necessary) to reduce the impact and following this the residual impact can be identified.

Cumulative Effects

The Ground Conditions and Land Contamination ES chapter will consider the potential for cumulative effects associated with the cumulative schemes (as relevant) listed in **Annex C: Cumulative Schemes** in combination with the Proposed Development.



LANDSCAPE AND VISUAL

It is considered that there is the potential for likely significant effects relating to landscape and visual and so this topic shall be **SCOPED IN** to the EIA. The landscape and visual assessment will be undertaken by Bidwells.

The ES shall:

- Define the landscape and visual baseline conditions;
- Identify relevant landscape and visual receptors;
- Assess:
 - the potential for landscape and visual impacts throughout the enabling and construction works and as a result of the completed development and resultant landscape and visual effects;
 - the likely significant landscape and visual effects;
 - any required mitigation or monitoring to address any likely significant adverse landscape and visual effects; and
 - the potential for cumulative effects in relation to landscape and visual with other agreed upon schemes in the surrounding area.

Baseline Conditions

Current Baseline Conditions

A detailed landscape and visual baseline analysis is provided in Section 4 and 5 in the Landscape and Visual Baseline (LVB) report, included within **Annex G: Landscape and Visual Baseline Report** of this EIA Scoping Report.

In summary, the landscape baseline identified two distinct areas: the agricultural landscape (associated with LCA 2B) and the Cambridge urban edge.

The Greater Cambridgeshire Shared Partnership, Greater Cambridge Landscape Character Assessment (Chris Blandford, 2021) considers the countryside landscape associated with LCA 2B to be of '*moderate condition*' and for the same reasons, including limited public access and interference of the M11 and A11 infrastructure with the scenic and perceptual qualities, this landscape area is considered of medium value.

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. There are some listed buildings but no Conservation Areas, therefore time depth is not readily evident. The most recent development appears of high quality design, with good materials, skyline articulation and massing responsive to context, all designed following a landscape-led approach which provides a variety of green spaces, some for active public use. Finally, there are some distinctive architectural elements, such as the award-winning Alison Brooks Rubicon residential blocks to the south of Phase 1. Overall, the townscape area is considered of medium-high value.

In visual terms, seventeen viewpoints have been selected to represent typical views for the identified visual receptors. The visual baseline for these receptors includes the rural context to the east of the M11 and a

distinctive wooded skyline; however, the existing urban edge of Cambridge and the road infrastructure itself disturb these elements in some views more than others.

Future Baseline Conditions

Construction work for Phase 1 of the development is currently ongoing and has progressed sufficiently to understand the emerging townscape and landscape character. Therefore, this is considered within the existing baseline. Given that the time limit for submission of reserved matters for any further housing development in relation to the 2013 outline planning permission has expired and that the Applicant intends to submit a new outline planning application for the remaining areas on site, it is assumed that the remainder of the site which has not been developed would remain as existing if the Proposed Development doesn't proceed further.

There is no evidence of any other emerging developments that will alter the landscape of the study area in the foreseeable future.

Receptors

The following visual receptors will be considered within the visual impact assessment:

- Motorists and pedestrians along Huntingdon Road, Madingley Road, The Avenue, Grantchester Road and Cambridge Road;
- Recreational users of PROWs 99/5, 55/6, 154/3 and The Ridgeway;
- Visitors of Redmeadow Hill;
- Residents in Phase 1; and
- Ramblers at Brook Leys.

A figure illustrating the location of the seventeen representative viewpoints is provided in Appendix 3 of **Annex G** of this EIA Scoping Report.

Landscape receptors are divided into character areas / types and landscape components.

Landscape Character Areas / Type:

- The Landscape Character Area: 2B Cottenham Fen Edge (Map 04 in Appendix 2 of the LVB) : this receptor is associated with the distinctive countryside setting of local PROW, the city and, therefore, the Cambridge Green Belt; any direct or indirect impacts caused by the proposed development could compromise the primary function of this key landscape policy area; and
- The Local Townscape Character – Early 21st Century Mixed Use Development (Figure 4 in the LVB): This receptor defines a key gateway edge of Cambridge, which is appreciated from major routes (the M11 and A14) and interfaces directly with the surrounding countryside.

Landscape Components:

- The Site: this receptor is currently characterised by an unmanaged meadow covering a peculiar, man-made topography. Despite its rural qualities, it is allocated for development in the Local Plan and only the northern and western edges are retained in the Green Belt policy.
- The Skyline of Cambridge: Although outside the Cambridge City authority area, the Proposed Development is continuous to the city and will contribute to this receptor, which currently affords a distinctive character associated to heritage assets and a strong vegetative cover.
- Network of Ditches: These water features are key expressions of the historical depth of the Fen's landscape.
- Tranquillity: this receptor is distinctive of the countryside landscape and key to the recreational experience along local PROWs.
- Vegetation Cover: in absence of large woodland blocks, the vegetation pattern of hedgerows and shelterbelt is distinctive of the local landscape and reminiscent of the historic village settlements.



Potential Effects

Enabling, Demolition and Construction

Construction works associated with the Proposed Development have the potential to create disturbance to the visual amenity and landscape resources identified in the LVB. The potential significant effects on landscape and views during the enabling works (including demolition) and the construction phase would vary according to the nature of the construction works over time, with certain operations having more perceptible effects than others as a result of the construction activities.

Completed Development

Based on the expected effect described in the LVB, it is considered that the following receptors have the potential to experience likely significant effects as a result of the completed Proposed Development:

Landscape Receptors

- The Site
- Tranquillity
- Vegetation cover
- Network of ditches

Visual Receptors

- Motorists and pedestrians along Huntingdon Road, Madingley Road, The Avenue, Grantchester Road and Cambridge Road;
- Recreational users of PROWs 99/5, 55/6, 154/3 and The Ridgeway;
- Visitors of Redmeadow Hill;
- Residents in Phase 1; and
- Ramblers at Brook Leys.

Assessment Methodology

The LVIA will form Volume 2 of the Environmental Statement (ES) and will accord with the relevant best practice guidance, namely:

- 'Guidelines for Landscape and Visual Impact Assessment', (GLVIA3) produced by the Landscape Institute with the Institute of Environmental Management and Assessment (Third Edition, 2013);
- 'Visual Representation of Development Proposals'. Technical Guidance Note 06/19, by the Landscape Institute (17 September 2019); and
- 'An Approach to Landscape Character Assessment' by Natural England (October 2014).

The LVIA considers two separate but inter-linked issues:

- Landscape Effects relate to changes in the fabric, character and quality of the landscape. These include direct impacts such as loss of vegetation, or less perceptible effects such as changes to tranquillity. Landscape effects do not need to be visible.
- Visual Effects relate to specific changes in views and the effects on visual receptors (e.g. users of public rights of way or recreational facilities). Changes to the visual setting of protected cultural heritage features are also considered (e.g. Scheduled Monuments, Listed Buildings and Conservation Areas).

The detailed landscape and visual assessment methodologies and scoring criteria are provided in Appendix 1 of the LVB (**Annex G**). Generally, landscape or visual effects are considered significant if:

- They result in a major loss of or irreversible negative effect over an extensive area, and/or a valuable feature, and/or a sensitive receptor; and
- The quality of change is of such scale and nature to cause a major and unacceptable mutation of the distinctive characteristics and value of the receptor (i.e. a non-characteristic, discordant or intrusive element).



Basis of Assessment

Due to the outline nature of the planning application, the LVIA will consider the worst-case scenario and the application will be assessed based on the following parameters, which will be evident in the planning application submitted documents:

- Maximum parameters – including height, massing and footprint;
- Design codes – greater weight will be given to the 'musts'; and
- Design and Access Statement (DAS).

The illustrative masterplan will not be assessed as a source of impact, but it will be considered in the mitigation measures as it conveys the achievement of high-quality design through a realistic application of the Design Code and DAS intents such that future reserve matters might benefit from aspiring to a similar result.

The assessment of visual effects will be informed by the preparation of appropriate technical visualisations in accordance with the Landscape Institute TGN 6/19 Visual representation of Development Proposals. It is recommended that the proposed viewpoints be tested in VuCity to identify those suitable for technical visualisations in liaison with the Local Authority planning team. The Type and AVR level will be also discussed and agreed with the Local Authority based on the set of viewpoints selected.

Enabling, Demolition and Construction

Once demolition and construction plans and programme are complete, activities and effects likely to cause visual or landscape impact will be identified and assessed in accordance with the approach in Appendix 1 of the LVB (**Annex G**).

Phasing

The LVIA worst-case scenario is the completion of all Proposed Development. It is unlikely that construction phases will have different impacts on the identified receptors. However, should this assumption be disproven in due course, the methodology set out in Appendix 1 of the LVB (**Annex G**) will be followed to identify relevant impact.

Completed Development

The completed development assessment will consider the effects of the Proposed Development once the scheme has been implemented as a whole, rather than a phased approach. The proposed methodology in Appendix 1 of the LVB (**Annex G**) will be applied to assess the potential effects of the completed development.

Cumulative Effects

Cumulative effects will be assessed following the same process illustrated in Appendix 1 of the LVB (**Annex G**).

NOISE AND VIBRATION

It is considered that there is the potential for likely significant effects relating to noise and vibration and so this topic shall be **SCOPED IN** to the EIA. The noise and vibration assessment will be undertaken by Trium Environmental Consulting LLP.

The ES shall:

- Define the noise and vibration baseline conditions;
- Identify relevant noise and vibration receptors;
- Assess:
 - the potential for noise and vibration impacts throughout the enabling, demolition and construction works and as a result of the completed development and resultant noise and vibration effects;
 - the likely significant noise and vibration effects;
 - any required mitigation or monitoring to address any likely significant adverse noise and vibration effects; and
 - the potential for cumulative effects in relation to noise and vibration with other agreed upon schemes in the surrounding area.

Baseline Conditions

Current Baseline Conditions

Noise monitoring will be undertaken to establish the baseline conditions on the site and surroundings. The noise positions for the monitoring are shown in Figure 1.

It is proposed (subject to agreement with an EHO, security and safety) that long-term unattended noise monitoring is completed at positions 1 to 4 on Figure 1. The long term monitoring will be completed for a period of 5-7 days, to include a weekend.

Short-term attended noise monitoring is to be completed at positions 5-7 on Figure 1. The purpose of these measurements is to assist in the calibration of the site wide acoustic model.

The long-term and sample noise measurements will be completed using 15-minute sample periods, in 1/3 octave bands, A and Z-weighting, and included all typical sound pressure level parameters eg, L_{eq} , L_{max} , L_{90} etc.

Initial site investigations indicate that the dominant source of noise is road traffic from the M11, though noise from other roads will also have a factor.

Vibration monitoring will not be completed due to the distance of the Proposed Development to potential sources of vibration. On this basis it is proposed that vibration effects in the site suitability assessment are **scoped out**.

Figure 1 Noise Monitoring Locations



Future Baseline Conditions

The future baseline conditions will likely be influenced by changes in road traffic. These will be evaluated using projected road traffic flows on the surrounding roads. It is considered unlikely that significant changes to the measured baseline conditions will be noted, due to the already high levels of noise produced by M11.

Receptors

As the construction of the Proposed Development will be phased, new buildings may introduce sensitive receptors once complete and occupied, and as such will be considered where relevant. There are also several existing and consented future residential developments that would need to be considered. As such, the assessment (enabling, demolition and construction and completed development) will consider the following sensitive receptors:

- A: 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);
- B: Girton College (Residential College);
- C: Lots S1 and S2 (Residential – Phase 1);
- D: Lot M1 (Residential – Phase 1);
- E: Lot M2 (Residential – Phase 1);
- F: Lot 5 (Residential – Phase 1);
- G: Lots 2 & 3 (Residential, Retail and Community Space – Phase 1);
- H: Lot S3 (Residential – Phase 1);

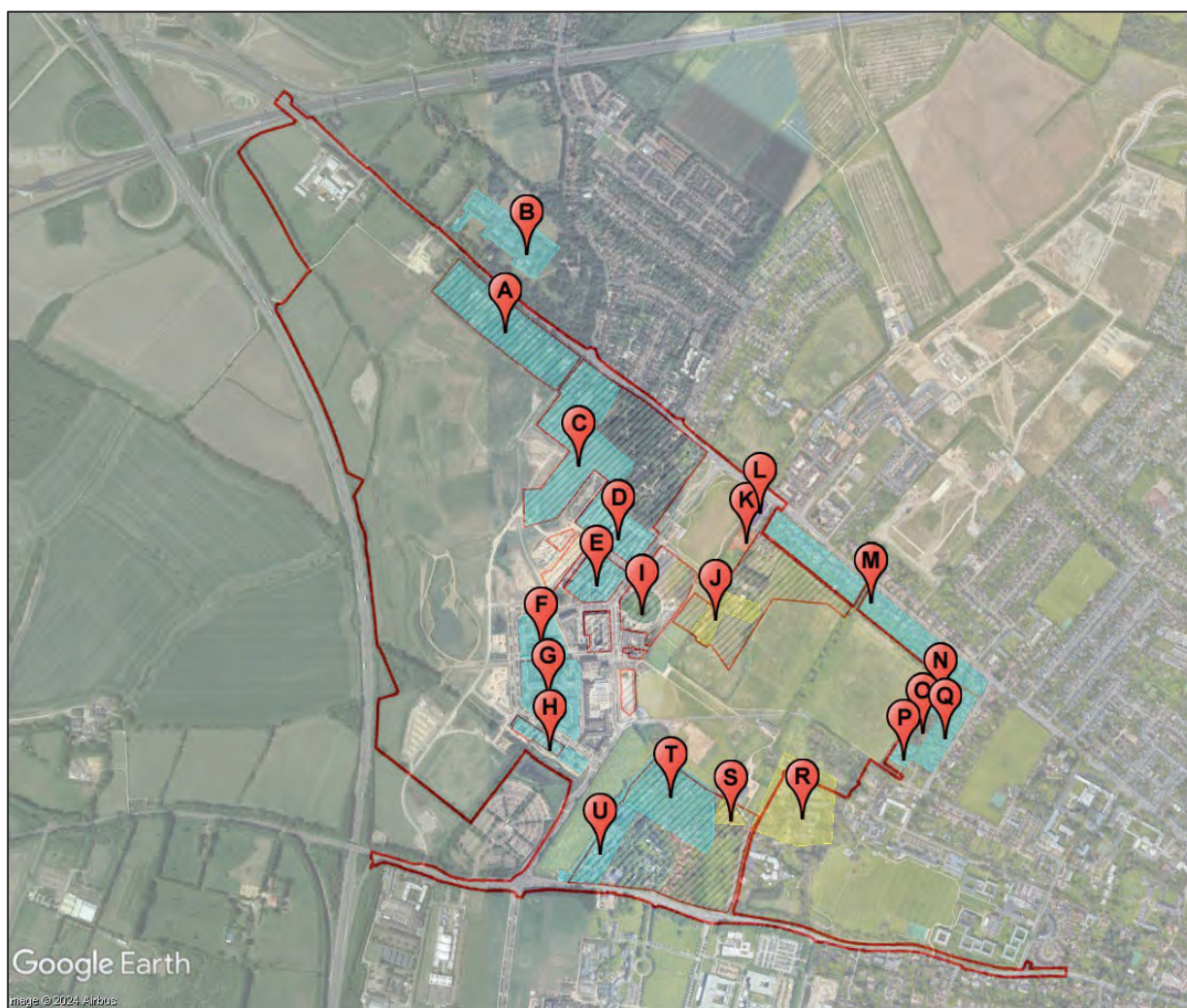


- I: University of Cambridge Primary School (School);
- J: UN Environment World Conservation Centre (Research Centre);
- K: Mill House (Residential) and Gusto Mills (Retail);
- L: Premier Inn Cambridge North (Hotel) and Travelers Rest (Restaurant with Residential);
- M: 147 – 217 Huntingdon Road (Residential);
- N: 4- 8 All Souls Lane (Residential);
- O: All Souls Lane (Workshop and Occasional Education and Exhibition Space);
- P: 32a, 32b and 34 Storey's Way (Residential;)
- Q: 2 to 30 Storey's Way (Residential);
- R: Madingley Rise Site (College)
- S: Institute of Energy and Environmental Flows (Research Centre);
- T: Conduit Head Road and 1-8 Bradrushe Fields (Residential); and
- U: 1-12 Landsdowne Road (Residential).

The location of the sensitive receptors are illustrated in Figure 2, as per the reference letter listed above.

The radius of receptors will be expanded if significant adverse effects are described at the receptors identified above, until 'not significant' effects are reached.

Figure 2 Noise Sensitive Receptors



The introduced residential receptors will also be considered as part of the site suitability assessment.

Potential Effects

Potential noise and vibration effects anticipated to arise during enabling, demolition and construction works, and noise effects during the Proposed Development once completed and operational/occupied will be considered in the assessment.

Enabling, Demolition and Construction

Potential noise and vibration effects that will be considered in relation to the enabling and construction works of the Proposed Development include:

- Temporary noise and vibration nuisance at nearby receptors (including introduced) because of enabling, demolition and construction works – associated with daytime and (if required) night time works;
- Noise nuisance to existing surrounding sensitive receptors from road vehicle movements generated during the enabling, demolition and construction works – associated with daytime works; and
- The cumulative enabling, demolition and construction impacts associated with this and other proposed schemes within the locality will be established and assessed.

Completed Development

Potential noise effects that will be considered in relation to the operation of the Proposed Development include:

- Noise generated by vehicles travelling on new and existing roads;
- Noise generated from the Proposed Development's building services plant, affecting existing and introduced surrounding sensitive receptors;
- Noise generated by the Proposed Development's commercial uses, affecting existing and introduced receptors; and
- The cumulative operational impacts associated with this and other proposed schemes within the locality will be established and assessed.

Assessment Methodology

Identification of potentially sensitive noise receptors on and surrounding the site, and categorisation of the 'sensitivity' of these receptors will be undertaken in accordance with EIA terminology presented in Table 1.

Table 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

The magnitude of impact shall be defined in accordance with recognised noise and vibration guidance, as referenced in the following sections, and corresponding EIA terminology – High, Medium, Low, Very Low.

The relationship between the magnitude of impact and the receptor sensitivities is determined by the scale evaluation matrix presented in Table 2.

Table 2 Scale Evaluation Matrix

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

The scale of effects will refer to guidance within the Noise Policy Statement for England (NPSE), the decision making includes identifying whether the overall effect of the noise exposure generated by a development is, or



would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level. The definitions for the different effect levels are outlined below:

- Significant Observed Adverse Effect Level (SOAEL): The level of noise exposure above which significant adverse effects on health and quality of life occur;
- Lowest Observed Adverse Effect Level (LOAEL): The level of noise exposure above which adverse effects on health and quality of life can be detected; and
- No Observed Effect Level (NOEL): The level of noise exposure below which no effect at all on health or quality of life can be detected.

The nature of effects will be defined as either adverse, beneficial or neutral.

Basis of Assessment

The assessments will be predominately based upon the maximum parameters for the site, as this will provide the largest number of new vehicles and other new noise sources.

The exception will be the site suitability assessment which will follow a two step approach. The initial evaluation will be based on the plot location and based entirely on the free-field sound pressure levels. The final evaluation will be based on the illustrative masterplan. The illustrative masterplan will be used to show how appropriate acoustic conditions can be incorporated into the future design of the buildings.

Enabling and Construction

The assessment of enabling, demolition and construction noise and vibration effects are described below:

- Estimation of noise and vibration generated (impact magnitude) during each principal phase of the enabling, demolition and construction works and an assessment of the likely effects on surrounding sensitive receptors pre-mitigation; and
- The assessment will be based on methodology set out in British Standard BS 5228^{1&2}, as interpreted within Table 3.

Table 3 Description of the Magnitude of Impact Rating for Assessing the Likely and Residual Effects of Demolition, Enabling and Construction Noise and Vibration

Magnitude Impact	Daytime Noise Level ³	Peak Particle Velocity Level
Very low	Below the LOAEL	≤0.30 mm/s
Low	Above or equal to LOAEL and below SOAEL	0.30 – 1.0 mm/s
Medium	Above or Equal to SOAEL and below SOAEL +5dB	1.0 – 10.0 mm/s
High	Above or equal to the SOAEL	>10.0 mm/s

- Road traffic associated with the enabling, demolition and construction works will be assessed using the same approach as described in Table 4 for general increases in road traffic.
- Classification of the pre-mitigated nature, scale and significance of noise and vibration effects.
- Identification of appropriate Best Practicable Means mitigation/ any other required mitigation and re classification of the residual effects (post mitigation) nature, scale and significance.
- Details of plant and equipment to be used throughout the demolition and construction works including % on times and sound power levels shall be presented within the ES.

¹ British Standards (BS) 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Noise, February 2014

² British Standards (BS) 5228-2:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Vibration, June 2014

³ The LOAEL will be determined as baseline ambient noise level ($L_{Aeq,10h}$) at the receptor, with the SOAEL determined by the 'ABC' method in Annex E.3.2 of BS 5228.



Phasing

It is anticipated that the enabling, demolition and construction of the Proposed Development will take place across four key phases. The assessment will consider specific worst-case points in the indicative enabling, demolition and construction programme, known as 'timeslices'. Occupants of the early completed phases will be considered as 'introduced' sensitive receptors during the later construction phases.

Completed Development

The operational noise affects will be assessed with respect to the 2024 baseline measurements, the development year (initial opening) and future year (15 years after opening).

Road Traffic

The assessment of noise associated with road traffic noise, will be completed with reference to the Calculation of Road Traffic Noise (CRTN⁴). Further advice is also given in the Design Manual for Roads and Bridges (DMRB⁵) for road traffic noise assessment. Significance criteria for assessing the traffic noise are presented in Table 4, which is based on the IOA / IEMA⁶ 'Guidelines for Noise Impact Assessment.'

Table 4 Description of The Magnitude of Impact Rating for Assessing the Effect of Increases in Ambient Noise Level

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

The short-term increase in road traffic noise at the existing receptors will be evaluated with respect to the initial opening year scenarios, i.e. the Do-Something Opening Year compared with the Do-Minimum Opening Year scenario.

The long-term increase in road traffic noise at existing receptors will be evaluated with respect to the future year scenarios i.e. the Do-Something Future Year compared with the Do-Minimum Future Year. This will be 15 years after the initial opening of the Proposed Development. This is expected to represent the full opening/use of the Proposed Development with all plots being fully built out and occupied.

Building Services Plant and Commercial Noise

For the assessment of building services plant and other commercial noise, reference will be made to the use of BS 4142:2014⁷. Criteria for the assessment are set in accordance with BS 4142 and the Institute of Acoustics (IOA) / Institute of Environmental Management and Assessment (IEMA) 'Guidelines for Noise Impact Assessment, as identified in Table 5.

Table 5 Description of The Magnitude of Impact Rating for Assessing the Effects of Building Services Plant Noise

Magnitude of Impact	Increase in Noise Level (dBA)	Description
Very low	<1.0	Noise increase is unlikely to be discernible

⁴ Department for Transport Welsh Office (1988) Calculation of Road Traffic Noise (CRTN)

⁵ Department for Transport Highways Agency Design Manual for Roads and Bridges: LA111 Noise and Vibration, May 2020

⁶ Institute of Environmental Management and Assessment (IEMA) and Institute of Acoustics (IOA) Guidelines for Noise Impact Assessment, October 2014

⁷ British Standards (BS) 4142:2014+A1:2019 Method for rating and assessing industrial and commercial sound, June 2019



Magnitude of Impact	Increase in Noise Level (dBA)	Description
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

The approach described in Table 5 for building services plant noise aligns with the “NOEL” described in Table 2 of Appendix C of Greater Cambridge Sustainable Design and Construction Supplementary Planning Document (SPD) ⁸.

Sports Pitches

Assessment of noise arising from the outdoor sports pitches associated with the Proposed Development are to be completed with reference to Sports England⁹. and WHO guidance, as per Table 6.

Table 6 Magnitude of Impact – Outdoor Sports Pitch Emissions

Magnitude of Impact	Absolute Noise Level (dBA)	Description
Very low	<45	At least 5 dB Sports England guidance for avoiding moderate annoyance
Low	45-50	Complies with Sport England guidance for avoiding moderate annoyance
Medium	51-55	Exceeds Sport England guidance for avoiding moderate annoyance
High	>55	+5 dB above Sport England guidance for avoiding moderate annoyance

Table 6 aligns with Paragraphs 18-27 of Appendix D to the Greater Cambridge Shared Planning SPD.

Exceptions to Table 6 will be made when the residual sound levels are higher than the predicted absolute noise levels from the sports pitches. In these situations, the evaluation will consider the increase in noise levels, as per Table 5.

Sui Generis

Sui Generis uses are to be incorporated. At this stage the type of Sui Generis building is unknown, though could include venues that play amplified music (live or recorded), i.e. in public houses or bars. Should it be required, the assessment of noise generated by amplified music will be completed with reference to the IOA’s Good Practice Guide on the Control of Noise from Pubs and Clubs and related published IOA articles, as interpreted in Table 7. It is noted that this aligns with the criteria included in Paragraph 14 of Appendix D of Greater Cambridge Shared Planning SPDs

Table 7 Magnitude of Impact Criteria Relating to the Use Amplified Music (if needed)

Magnitude of Impact	Increase in Noise Level (dBA)	Description
Very low	L_{Aeq} does not exceed the background L_{A90} level, L_{10} does not exceed the background L_{90} level in any 1/3 octave band between 40 Hz and 160 Hz	Entertainment noise barely audible
Low	L_{Aeq} does not exceed the background L_{A90} level	Low frequency noise audible, but noise sources are not readily identifiable
Medium	L_{Aeq} does not exceed the background L_{A90} level by more than 5 dB	Entertainment noise generally audible
High	L_{Aeq} does not exceed the background L_{A90} level by more than 10 dB	Entertainment noise clearly audible

⁸ Greater Cambridge Sustainable Design and Construction Supplementary Planning Document, Greater Cambridge Shared Planning, January 2020

⁹ Sport England (2015) Artificial Grass Pitch (AGP) Acoustics – Planning Implications

Should it be required, the evaluation of outdoor music events would be completed with reference to the Code of Practice on Environmental Noise Control at Concerts¹⁰.

Site Suitability

For noise impacts on the Proposed Development itself, the assessment shall focus on the suitability of the site for residential use and how acceptable noise levels will be achieved in apartments and outdoor living spaces (including play and communal gardens) to future residents.

These assessments shall be in accordance with BS 8233:2014¹¹, BS 4142:2014+A1:2019 (specifically with respect to the noise produced by the existing building services plant), WHO, ProPG guidelines and Greater Cambridge Shared Planning SPDs.

Accordingly, an initial evaluation of the free-field sound levels during the day and night will be provided for each development plot. The sound levels will then contextualised using Table 1 of appendix C of Greater Cambridge SPD, i.e. defining the potential impact for each development plot in terms of NOEL, LOAEL or SOAEL.

It is expected that parts of the Proposed Development will fall within the SOAEL thresholds. As per Paragraph 3.6.88 of the SPD, an evaluation with respect to the illustrative masterplan will be completed, which illustrates how acoustic mitigation can be incorporated into the design of the residential units so that suitable conditions for resting and sleeping are achieved.

For summer cooling, the assessment will consider Approved Document O (ADO)¹², which is now a statutory requirement.

Cumulative Effects

The possible cumulative impacts associated with the Proposed Development (both during enabling and construction and once operational) and other proposed cumulative schemes will be established and assessed as relevant. This will principally be in relation to:

- Construction related impacts and any increases in road traffic along roads, with the assessment undertaken in line with methods outlined above; and
- Cumulative construction noise and vibration effects associated with construction works at the site being undertaken simultaneously with construction works on other surrounding cumulative schemes sites.

In general, cumulative demolition and construction effects will not be considered for schemes/plots that are more than 200m from the receptors affected by the Proposed Development. Potential exceptions will be where the construction traffic share common routes along minor roads.

Operational cumulative effects will be limited to considering traffic and building services plant noise emissions only. The assessment of cumulative plant noise emissions will be limited shared receptors that are no more than 200m from each scheme.

Non-Significant Effects

There are no notable sources of existing environmental vibration, so vibration would not affect the suitability of the site and mitigation measures will not be required. On this basis it is proposed that vibration effects in the Site Suitability assessment are **scoped out**.

¹⁰ Code of Practice on Environmental Noise Control at Concerts, The Noise Council, 1995

¹¹ BS 8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings

¹² The Building Regulations 2010 – Approved Document O – Overheating

SOCIO-ECONOMICS

It is considered that there is the potential for likely significant effects relating to socio-economics and so this topic shall be **SCOPED IN** to the EIA. The socio-economic assessment will be undertaken by Quod.

The ES shall:

- Identify a relevant spatial scale for assessment;
- Define the socio-economic baseline conditions at that spatial scale;
- Identify relevant socio-economic receptors within that study area;
- Assess:
 - the potential for socio-economic impacts throughout the enabling, demolition and construction works; and as a result of the completed development and the resultant socio-economic effects;
 - the likely significant socio-economic effects;
 - any required mitigation or monitoring to address any likely significant adverse socio-economic effects; and
 - the potential for cumulative effects of the Proposed Development in combination with other relevant proposals within the study area.

Baseline Conditions

Current Baseline Conditions

The site is approximately 131.5ha and is 2km to the north-west of Cambridge City Centre, at its nearest point. The site includes some parts of the emerging settlement of Eddington, built out under the previous planning permission (the 2013 OPP), including homes, shops and Eddington Square.

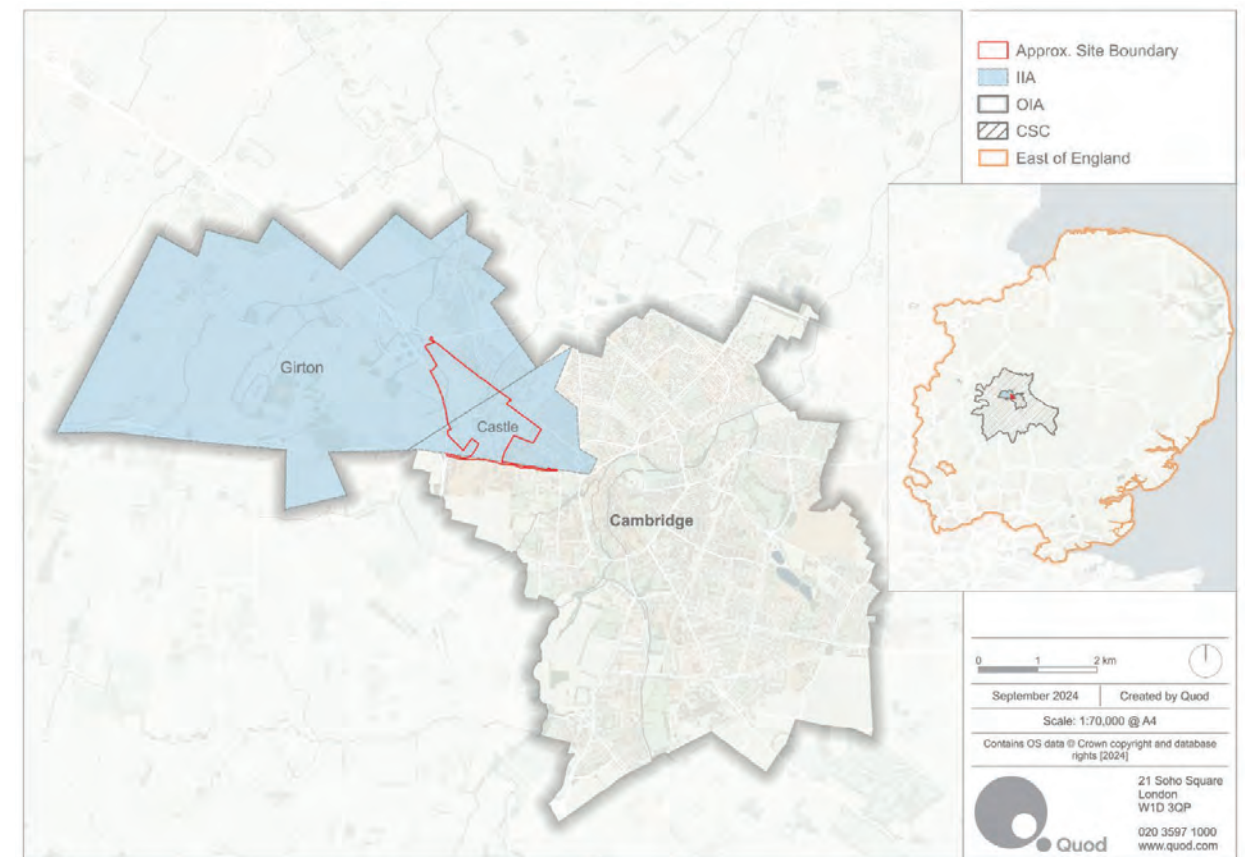
The site includes disused agricultural fields, existing homes, playing fields, areas of hard standing used for parking, a Sainsbury's Supermarket, Eddington Cricket Field, cleared construction sites, a currently decommissioned storm water recycling system, and also incorporates sections of Huntingdon Road (to the north) and Madingley Road (to the south).

Quod has defined an Inner Impact Area (IIA) and an Outer Impact Area (OIA) for demographic, housing and economic baseline data. These are:

- IIA: Castle Ward (Cambridge) and Girton Ward (South Cambridgeshire); and
- 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).

Cambridge and South Cambridgeshire (CSC) and the East of England will be provided for context and for the construction labour market. This is shown in Figure 1.

Figure 1 Baseline Context Map



**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 2 of the main report) are not included for illustration purposes.*

Existing education provision and capacity (for primary and secondary schools) will be considered within:

- 1km of the site for primary schools¹; and
- 5km of the site for secondary schools.

Existing primary healthcare services (GPs) and community centres will be considered within 1km of the site, and existing open space and playspace will be considered within 800m of the site. Libraries will be considered across Cambridge and South Cambridgeshire considering strategic plans for the service (including online and mobile services).

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

- 2021 Census²;
- Business Register and Employment Survey (2022)³;
- Claimant Count (2023)⁴;
- Index of Multiple Deprivation (2019)⁵;
- Annual School Census Data (2023)⁶ and information from Cambridge school admission documents;
- Data on healthcare services from the NHS Digital (2023)⁷; and,

¹ 1km is widely accepted as a 10-15 minute walk as outlined in Transport for London (TfL) (2017). Analysis of Walking Potential 2016.

² Office for National Statistics (2021). Census.

³ Office for National Statistics (2022). Business Register and Employment Survey.

⁴ Office for National Statistics (2023). Claimant Count.

⁵ Ministry of Housing, Communities and Local Government (2019). Indices of Multiple Deprivation.

⁶ Department for Education (2023). Schools, Pupils and their Characteristics. (Annual School Census Data, 2023).

⁷ National Health Service (2023). NHS Digital – Workforce Data Report.



- Open space and playspace information from Ordnance Survey data⁸, alongside a desktop study and information from site visits.

If more up to date information is available at the time of writing, this will be used.

A brief overview of the socio-economic context, which has informed the choice of potential sensitive receptors, is outlined below.

Demographic Baseline

The IIA ward boundaries changed between 2011 and 2021, so direct comparison of the population change is not possible (without using LSOA/OA proxies). The change in population for the OIA and wider spatial scales is shown in Table 1 below. Of particular relevance is the overall population growth in the OIA (much higher than the background trend) and the growth of the population of people over the age of 75 in the IIA (small absolute numbers but significant percentage growth).

Table 1 Demographic Summary

Measure	IIA	OIA	CSC	East of England
Population				
Total Population (2021)	13,161	145,674	307,793	6,335,075
Total Population (2011)	N/A	128,426	272,622	5,846,965
Change (%)	N/A	+21,807 (+18%)	+35,171 (+13%)	+488,110 (+8%)
Age Profile				
Ages 0-18 (2021)	2,182	27,506	63,586	1,396,222
Ages 0-18 (2011)	N/A	23,708	57,686	1,328,128
Change (%)	118 (+6%)	3,798 (+16%)	5,900 (+10%)	68,094 (+5%)
Ages 75+ (2021)	1,054	8,592	23,130	587,918
Ages 75+ (2011)	N/A	8,172	19,287	492,789
Change (%)	N/A	420 (+5%)	3,843 (+20%)	95,129 (+20%)

Source: 2021 Census, 2011 Census

Labour Market Baseline

The economically active population of the OIA grew by 27% over the decade as shown in Table 2. Unemployment fell across the OIA (-8%), CSC (-7%) and East of England (-20%). The full-time student population grew by 14.1% within the OIA. Student numbers fell in South Cambridgeshire negating the increase in Cambridge students within CSC (+4.7%). Student numbers across East of England fell by 19.1%.

Table 2 Labour Market Summary

Measure	IIA	OIA	CSC	East of England
Economic Activity Status				
Economically Active (2021)	11,429	129,103	255,126	5,148,282
Economically Active (2011)	N/A	101,643	206,062	4,245,544
Change (%)	N/A	+27,461 (+27%)	+49,064 (+24%)	+902,738 (+21%)
Unemployed (2021)	167	2,496	7,291	129,305
Unemployed (2011)	N/A	2,712	7,852	161,631
Change (%)	N/A	-216 (-8%)	-561 (-7%)	-32,326 (-20%)
Students, Economically Active (2021)	556	6,511	14,963	102,626
Students, Economically Active (2011)	N/A	5,704	14,279	126,893
Change (%)	N/A	+807 (+14%)	+684 (+5%)	-24,267 (-19%)

Source: 2021 Census, 2011 Census

⁸ Ordnance Survey, Live Data Source. OS Open Greenspace.



Housing Market

The adopted Cambridge Local Plan (2018) and South Cambridgeshire Local Plan (2018) set out annual targets for the delivery of new homes. Delivery is assessed annually within the Greater Cambridgeshire Authority Monitoring Report and Housing Trajectory and Housing Land Supply Report.

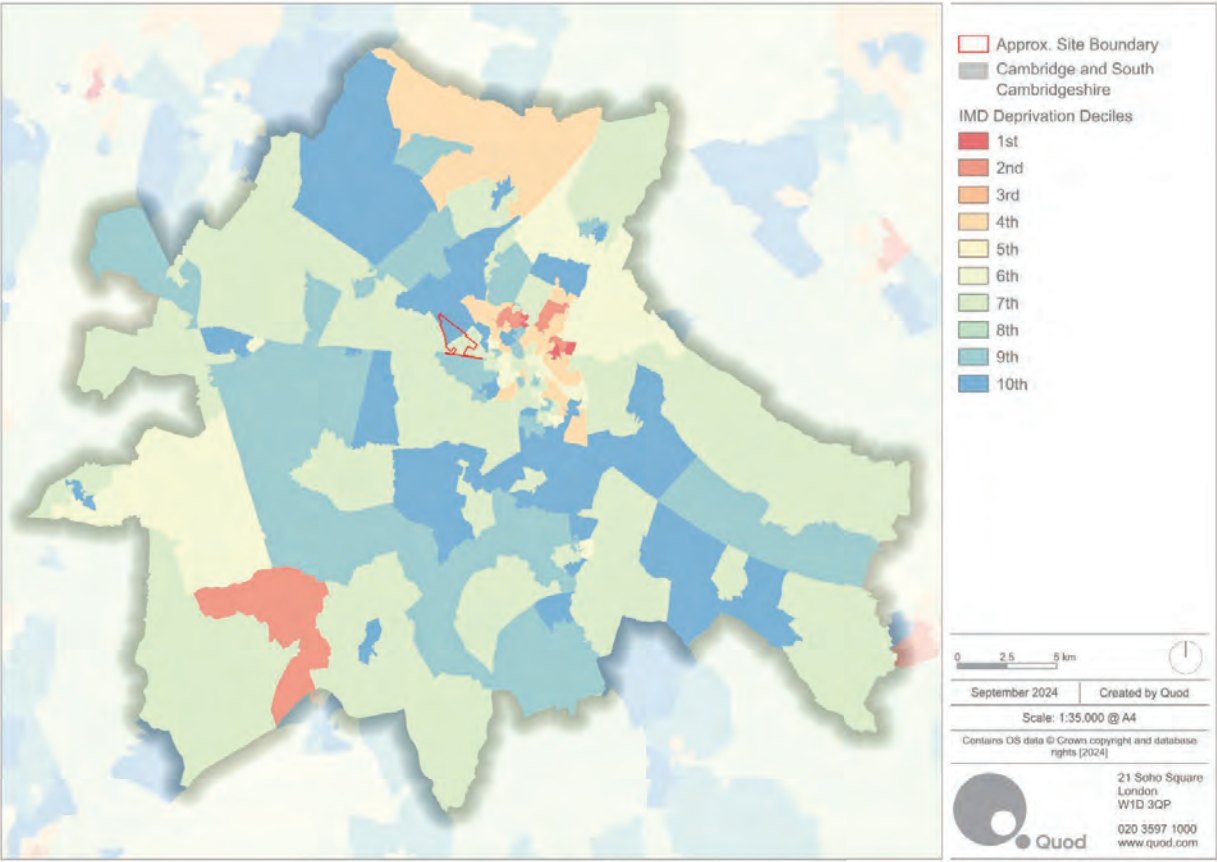
In Cambridge delivery exceeded the cumulative target of 8,400 new homes over the plan duration by 942 homes (11.2%), although Cambridge house prices remain among the highest in the county (taken as ratios of house price to income) so this will still be a high sensitivity receptor.

In South Cambridgeshire over the period 2011-2023, delivery fell short of annualised targets between 2011/12 and 2017/18 and exceeded targets between 2018/19 and 2022/23. Overall delivery was short of the cumulative target of 11,700 homes by 843 units (7.2%) and house prices are similarly high so this will be a high sensitivity receptor.

Deprivation Baseline

The English Index of Multiple Deprivation (2019), as shown in Figure 2, indicates that neighbourhoods around the site are among the least deprived in the England so there are no specific sensitivities associated with deprivation in the IIA. There are some neighbourhoods in Cambridge (North East) that are relatively deprived and they form part of the OIA.

Figure 2 Index of Multiple Deprivation: Relative Deprivation by LSOA Ranked Most (1st Decile) to Least (10th Decline)



*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 2 of the main report) are not included for illustration purposes.

Future Baseline Conditions

The future baseline will consider additional social infrastructure expected to be delivered once the Proposed Development is anticipated to be fully complete and operational. This information will be taken from planning policy and Infrastructure Delivery Statements where available. Future population projections from the ONS will be used.



Receptors

Based on the baseline and context of the site, the following existing receptors are considered potentially sensitive to socio-economic impacts arising from the Proposed Development:

- The existing occupants of the site (residents, employees and businesses);
- The construction industry and its employees at a regional level;
- The local economy and labour market, i.e. local businesses and economically active residents at an OIA level;
- The local housing market (housing need) (Cambridge and South Cambridgeshire Level);
- Local social infrastructure and its users, specifically:
 - Primary schools within 1km of the site;
 - Secondary schools within 5km of the site;
 - GP surgeries within 1km of the site (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;
 - Library Services within Cambridge and South Cambridgeshire; and
 - Open space and playspace within 800m of the site.

The Proposed Development will also introduce new residents and workers to the site which may be sensitive to the socio-economic impacts. These receptors will be included in the assessment as relevant.

Potential Effects

Enabling, Demolition and Construction

The Proposed Development is expected to generate a range of socio-economic effects during the enabling, demolition and construction including generation of temporary employment during the construction phase. The proposals will also result in a loss of existing uses (including a loss of employment) as outlined above.

Indirect construction effects are not likely to be significant and as such are scoped out of this assessment. The number of construction workers would fluctuate on site over the course of the construction programme, as such it is challenging to accurately quantify the level of spending captured locally. It is also not possible to quantify supply chain and procurement effects as the level of information required will not be available at the planning application stage. The spatial context of supply chain effects can range from local to national and international depending on the supply and sourcing of construction materials. Whilst these effects are likely to be beneficial, they are unlikely to be significant.

Completed Development

The Proposed Development is expected to generate a range of socio-economic effects during the completed development including:

- Employment opportunities once the Proposed Development is complete and occupied;
- Delivery of new homes (total number of homes proposed);
- Spending by residents and employees;
- The effect of the population accommodated by these new homes on social infrastructure, specifically schools, primary healthcare, community centres, libraries open space and playspace.

The following potential socio-economic effects are not likely to be significant and as such are scoped out of this assessment:

- Dentists - it is not appropriate to undertake a quantitative assessment of the Proposed Development's impact on the capacity of dentists in the same way as for primary healthcare. Take up and usage of dentists varies and cannot be accurately predicted or measured at a site specific level. Advice on 'how to find an NHS dentist' from the NHS advises that dental practices do not have a catchment area based on place of residence so provision is not planned for at a site specific scale.



- Crime - it is suggested that potential effect upon crime is scoped out of this assessment. It is not possible to accurately assess the impact of a development of this scale and type on crime. Effects are likely to be multi-directional with a greater residential population, but also development can offer better design, permeability and passive surveillance of areas, resulting in net beneficial effects that are not likely to be significant.

Assessment Methodology

The socio-economic ES chapter will provide a list of relevant planning policy and guidance at the local (Cambridge and South Cambridgeshire). This will include details of compliance with the Local Plan policies and guidance, where relevant to the assessment. For example, this includes:

Cambridge Local Plan (2018)

- Policy 40: Development and Expansion of Business Space;
- Policy 43: University Development;
- Policy 46: Development of Student Housing;
- Policy 59: Designing Landscape and Public Realm;
- Policy 68: Open Space and Recreation Provision Through New Development;
- Policy 73: Community, Sports and Leisure Facilities;
- Policy 74: Education Facilities; and
- Policy 75: Healthcare Facilities.

South Cambridgeshire Local Plan (2018)

- Policy S/5: Provision of New Jobs and Homes;
- Policy SC/5: Community Healthcare Provision;
- Policy SC/7: Outdoor Play Space, Informal Open Space and New Developments; and
- Policy TI/9: Education Facilities.

The assessment of potential likely significant socio-economic effects will be undertaken using the following methodology and/or tools.

Basis of Assessment

Socio-economic effects will be assessed as a single demolition and construction phase, with the operational phase assessment assuming a fully complete and occupied Proposed Development.. These effects are compared against baseline conditions - where direct comparisons are possible – to consider the likely significance of identified effects. This approach is considered appropriate and robust given the nature of socio-economic receptors (i.e. social infrastructure and labour market) are affected by residents accommodated by the Proposed Development accessing services or employees contributing to the local economy.

As this is an outline planning application, the reasonable 'worst case' will be assessed – this differs by effect:

- For employment creation, housing provision and expenditure, the reasonable 'worst case' will be based on a minimum development scenario based upon reasonable assumptions from the illustrative schemes; and
- For population yield and associated impacts on social infrastructure (i.e. education, primary healthcare and playspace), the reasonable 'worst case' will be based on an indicative maximum residential unit mix informed by the illustrative scheme.

Enabling, Demolition and Construction

Enabling works and construction-related employment effects will be assessed using the Construction Industry Training Board (CITB) Labour Forecasting Tool⁹.

The loss of existing uses will also be considered on a qualitative basis taking into consideration the phased demolition and construction programme, and any temporary measures proposed.

⁹ Construction Industry Training Board (2022). Labour Forecasting Tool



Phasing

A qualitative assessment of phasing will be undertaken to consider the implications of a phased occupation. This will include consideration of disruption during construction and the timing of delivery of social infrastructure. The assessment will not assign scale and significance to the effect as the outline nature of the application means it is not possible to undertake a detailed phase by phase assessment of impacts.

Completed Development

Direct operational employment effects will be assessed by applying standard job density ratios from the Homes and Communities Agency Guidance (2015)¹⁰ to the proposed non-residential floorspace.

Delivery of housing (total numbers of homes proposed) will be assessed against the Cambridge Local Plan (2018) and South Cambridgeshire Local Plan (2018) targets.

Total population will be calculated with reference to the average household size of the OIA.

Demand for education will be calculated using the following Cambridge City Council SPD¹¹ yields unless otherwise confirmed by the County Council Education Department as part of the scoping response:

- On average every 100 new dwellings are likely to generate 25 primary school aged children and 20 secondary school aged children.

Demand for education will be assessed by considering the primary and secondary age yield against existing capacity in schools surrounding the site. The age brackets will be as follows:

- 4-10 years for primary; and
- 11-16 years for secondary.

GP provision will be assessed based on the regional and national average benchmark of patients per Full Time Equivalent GP.

Open space and play space will be assessed on the basis of the Cambridge City Council SPD¹² Table 1.

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 predicated or quantitatively assessed – provision of these types of facilities is responsive to demand in the local community.

An estimate of spending generated as a result the completed Proposed Development would be calculated using average household spending figures¹³ and an average figure for daily worker spending¹⁴.

Cumulative Effects

The socio-economic assessment will also include a cumulative assessment, considering the likely socio-economic effects arising from the Proposed Development in conjunction with other relevant cumulative schemes – the assessment shall be quantitative where possible.

CLIMATE CHANGE AND GREENHOUSE GASES

It is considered that there is the potential for likely significant effects relating to the impacts of climate change on the Proposed Development and the impacts of greenhouse gas (GHG) emissions as a result of the Proposed Development on the climate so this topic shall be **SCOPED IN** to the EIA. This climate assessment is to be conducted by suitably qualified sustainability consultants from AECOM.

The ES Climate Chapter shall comprise:

- **Part A:** Climate Change Risk (CCR) Assessment - to understand the vulnerability of the Proposed Development to climate change an assessment will be undertaken to identify any potential risks and where necessary appropriate adaption measures; and
- **Part B:** Greenhouse gas (GHG) Impact Assessment - a whole lifecycle GHG assessment to understand the impact of the Proposed Development on the climate during construction, operation and decommissioning of the project and to identify mitigation measures where appropriate.

The above assessments shall pertain solely to the Proposed Development and excludes any upgrade, maintenance or retrospective assessment related to previous development of Phase 1.

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 because it is anticipated there will not been any significant impacts.

PART A: CLIMATE CHANGE RISK (CCR) ASSESSMENT

The study area for the CCR Assessment is the land within the red line boundary, i.e. it covers the construction and operation of all assets (e.g. employees, contractors, and visitors) and infrastructure which constitutes the Proposed Development.

Baseline Conditions

The current baseline for the assessment of climate change risks to the Proposed Development (the CCR Assessment) will be based on historical climate data obtained from the Met Office¹ recorded by the closest meteorological station to the Proposed Development (Cambridge Niab, 3.5 miles North of the Proposed Development), as summarised in Table 1 below. This baseline utilises the climate average data for the period 1981-2010.

¹⁰ Homes and Communities Agency (2015). *Employment Density Guide*

¹¹ Cambridge City Council (2023). *Planning Obligations Strategy SPD Annex 1.*

¹² Cambridge City Council (2023). *Planning Obligations Strategy SPD Annex 1.*

¹³ Office for National Statistics (2023). *Household Expenditure Survey*

¹⁴ Visa Europe (2014). *UK Working Day Spending Report – adjusted to reflect inflation.*

¹ UK Met Office, 2019. *UK Climate Averages (Cambridge Niab)*. Available at:

<https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/u1214qqj0>



Table 1 Historic Climate Data (Cambridge Niab)

Climatic Variable	Baseline data 1981-2010
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

The future climatic baseline for the Proposed Development will be determined through the UK Climate Impacts Programme UK Climate Projects 2018 (UKCP18)². To provide context, projects for England highlight the following examples of changes to the climate relative to the 1981-2010 baseline, under the Representative Concentration Pathways (RCP) 4.5 and 8.5, up until 2070-2099 to cover a 60-year design life for buildings³, see Table 2, with a summary of expected changes as follows:

- Mean temperatures are expected to increase in both summer and winter;
- Mean daily maximum and minimum temperatures to increase across the UK in both summer and winter;
- Winter precipitation is expected to increase, and summer precipitation will decrease; and
- Increased frequency of extreme weather events.

Examples of extreme weather events near the Proposed Development that will inform the baseline include:

- 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^{4,5}; 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^{4,6}.

Receptors

In relation to climate resilience and adaptation, the assessment focusses on the Proposed Development. Relevant receptors include residents, users of the Proposed Development, and the buildings and infrastructure itself.

² UK Met Office, 2019. UK Climate Projection 2018 (UKCP19). Available at:

<https://www.metoffice.gov.uk/research/approach/collaboration/ukcp>

³ RICS, 2023. While life carbon assessment for the built environment. Available at:

https://www.rics.org/content/dam/ricsglobal/documents/standards/Whole_life_carbon_assessment_PS_Sept23.pdf

⁴ UK Met Office, 2024. Heatwave, September 2023. Available at:

https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/interesting/2023/2023_05_september_heatwave.pdf

⁵ The Hunts Post, 2024. Storm Henk: Cambridgeshire flood alerts and updates. Available at:

<https://www.huntspost.co.uk/news/24024201.storm-henk-cambridgeshire-flood-alerts-updates/>

⁶ ITV News, 2023. UK sees seventh consecutive day of 30C heat in September. Available at: <https://www.itv.com/news/2023-09-10/uk-sees-seventh-consecutive-day-of-30c-heat-in-september>



Potential Effects

The Proposed Development during its construction and operation may be vulnerable to impacts from various climatic parameters such as extreme weather events and temperature change. To understand the vulnerability of the Proposed Development to climate change, the CCR Assessment will identify any potential climate risks and the likelihood and consequence of their impact. Where necessary appropriate adaption measures will be identified.

Assessment Methodology

Sensitivity

An assessment of the resilience of the Proposed Development to climate change will be undertaken to identify potential climate change hazards and then consider their potential consequence and likelihood of impact occurrence. Measures to adapt to the impacts of climate change will be incorporated into the design of the Proposed Development.

The types of receptors considered vulnerable to climate change are:

- Construction phase receptors e.g. workforce, materials, plant and machinery; and
- The Proposed Development's occupants, assets, and their operation, maintenance and refurbishment e.g. electrical equipment, facility pavements and structures, earthworks and drainage technology.

The CCR Assessment will provide commentary on how the Proposed Development will be resilient to the predicted future climate impacts identified using baseline UKCP18 data². UKCP18 projections for the 25km grid cell where the Proposed Development is located will be used to examine future climate parameters. This climate projection data provides a probabilistic indication of how global climate change is likely to affect the Proposed Development using defined climate variables and time periods.

Magnitude of Impact

The approach outlined below is aligned with existing guidance, provided by the Institute of Environmental Management and Assessment (IEMA)⁷. Climate parameters to be considered in the CCR Assessment across all lifecycle stages include the following:

- Extreme weather events (storms, wildfire and drought);
- Precipitation change (flooding);
- Temperature change;
- Sea level rise;
- Sea temperature rise; and
- Wind.

The following key terms and definitions relating to the CCR Assessment will be used:

- Climate hazard – a weather or climate related event, which has potential to do harm to environmental or community receptors or assets, for example, increased winter precipitation;
- Climate change impact – an impact from a climate hazard which affects the ability of the receptor or asset to maintain its function or purpose; and
- Consequence – any effect on the receptor or asset resulting from the climate hazard having an impact.

The likelihood of a climate impact occurring is based on the likelihood of the hazard occurring combined with the vulnerability of the Proposed Development, using professional judgement and in discussion with the design team. Embedded mitigation measures will also be taken into account and a likelihood rating will be assigned as described in Table 2.

Following the identification of climate hazards, the likelihood and consequences will be assessed according to categories and descriptions based on the IEMA climate change resilience and adaptation guidance⁷.

⁷ Institute of Environmental Management and Assessment (IEMA), 2020. Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation. Available at: <https://www.iema.net/content/iema-eia-guide-to-climate-change-resilience-and-adaptation-2020/>



Scale and Nature of Effects

The scale and nature of the CCR Assessment is determined as a function of the likelihood of a climate change impact occurring and the consequence to the receptor if the impact occurs. The scale is detailed in Table 5. The assessment will take into account confirmed design and mitigation measures (referred to as embedded mitigation).

Table 2 Scale of Effect Matrix for CCR Assessment

Level of Consequence of a Climate Risk Occurring	Likelihood of Climate-Related Impact Occurring				
	Insignificant	Minor	Moderate	Major	Catastrophic
Rare	Low (NS)	Low (NS)	Medium (NS)	Medium (NS)	Medium (NS)
Unlikely	Low (NS)	Low (NS)	Medium (NS)	High (S)	High (S)
Moderate	Low (NS)	Medium (NS)	High (S)	High (S)	Extreme (S)
Likely	Medium (NS)	High (S)	High (S)	Extreme (S)	Extreme (S)
Almost Certain	Medium (NS)	High (S)	Extreme (S)	Extreme (S)	Extreme (S)

Potential Significant Effects

The CCR Assessment will consider two phases of the Proposed Development (construction and operation). The potential climate change impact will be determined based on the UKCP18 projections for the parameters described in Table 3.

Table 3 Climatic Parameters for the CCR Assessment

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 ⁸ , 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 ⁹ .
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 ¹⁰ . 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.

Scope for Mitigation

The scope for mitigating measures for the CCR Assessment will be informed by the design team and other relevant technical disciplines. These will focus on measures to increase the resilience of the Proposed Development to climate change impacts and will be informed by the design team and other relevant technical assessments. For example, this may include designing surface water drainage systems to make sure flows up to the 1 in 100-year return period can be contained and managed within the Proposed Development.

⁸ Topographic map, no date. England topographic map. Available at: <https://en-gb.topographic-map.com/map-kb57/England/?center=52.21881%2C0.12098&zoom=14&popup=52.21992%2C0.08926>

⁹ IPCC, 2021. AR6 Sea Level Projection Tool. Available at: <https://sealevel.nasa.gov/ipcc-ar6-sea-level-projection-tool>

¹⁰ Kendon, M. et al, 2022. State of the UK Climate 2022. Available at: <https://rmets.onlinelibrary.wiley.com/doi/10.1002/joc.8167>



PART B: GREENHOUSE GAS EMISSIONS ASSESSMENT

The study area of the GHG Assessment will consider:

- All direct GHG emissions arising from activities undertaken within the boundary of the Proposed Development during construction and operation¹¹; and
- Any indirect emissions arising outside the site boundary. For example, embodied carbon in materials used in the construction of the Proposed Development i.e. emissions as a result of raw material extraction, processing and manufacture, and their associated transport, transport and disposal of waste and transportation of workers.

Baseline Conditions

The current baseline and future baseline for the assessment of the impact of the Proposed Development on climate is a do-minimum scenario where the Proposed Development is not constructed, and the existing site remains the same.

Receptors

The receptor for GHG emissions is the global climate.

In terms of the GHG assessment, GHGs contribute towards climate change, which is a global-scale cumulative effect, but do not cause direct local or regional effects, therefore no specific receptor locations are assessed in the GHG assessment.

UK Carbon Budgets will be used as a proxy for the global climate when considering the impact of GHG emissions from the Proposed Development.

Potential Effects

The construction and operation of the Proposed Development is likely to result in the release of GHG emissions, which as a whole impact the global climate.

Key sources of emissions from the Proposed Development include:

- Embodied carbon in materials and their transportation used in the construction and maintenance of the Proposed Development;
- Emissions arising from construction activities including onsite plant and machinery and workers' travel; and
- Operational emissions from the Proposed Development. including the use of energy, and repair and maintenance of the Proposed Development.

To understand if the Proposed Development will have a significant impact the GHG assessment will demonstrate the potential contribution of the development to the UK's commitment to the reduction of greenhouse gases through an assessment of project emissions against the UK's five year national Carbon Budgets.

Assessment Methodology

Basis of Assessment

GHG emissions will be assessed using a calculation-based methodology as per the below equation:

$$\text{ACTIVITY DATA} \times \text{GHG EMISSIONS FACTOR} = \text{GHG EMISSIONS VALUE}$$

When relevant activity data is available, emissions factors published annually by DESNZ (Department for Energy Security and Net Zero)¹², will be used as principal source data for calculating GHG emissions from construction.

A set of standard data quality principles will be applied so that the results from the GHG assessment are as accurate and representative as possible:

- Age: Activity data and GHG emissions factors applicable to the study period will be used;
- Geography: Activity data will reflect the design of the Scheme. GHG emissions factors will be representative of the UK construction industry and UK transport sector;

¹¹ Decommissioning is out of scope for this assessment.

¹² Department for Energy and Security and Net Zero (DEZNZ), 2023. Greenhouse gas reporting: conversion factors 2023. Available at: <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023>



- Technology: The default solution will be to apply data which is representative of the UK construction industry and transport sector. However, technology-specific data may be used for the purpose of developing scenarios of the future;
- Methodology: Activity data will be gathered from the Proposed Development's engineering and design teams to enable consistency and completeness of data collection; and
- Competency: Data gaps will be addressed through, for instance, peer-reviewed papers (published in recognised journals) or industry-specific literature (e.g., UK construction trade associations). GHG emissions factors from a range of sources will be used: Environmental Product Declarations (EPDs) (adhering to BS EN 15804 standard¹³), Life Cycle Assessment (LCA) tools (aligned with best practice), and industry-specific and UK Government sources.

In line with applicable guidelines from the World Business Council for Sustainable Development (WBCSD)/World Resources Institute (WRI) Greenhouse Gas Protocol initiative¹⁴, the GHG emissions assessment will be reported as tonnes of carbon dioxide equivalent (tCO₂e) and consider the seven Kyoto Protocol gases:

- Carbon-dioxide (CO₂);
- Methane (CH₄);
- Nitrous oxide (N₂O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs);
- Sulphur hexafluoride (SF₆); and
- Nitrogen Trifluoride (NF₃).

These GHGs are broadly referred to in this ES chapter under an encompassing definition of 'GHG emissions', with the unit of tCO₂e (tonnes CO₂ equivalent) or MtCO₂e (Mega tonnes of CO₂ equivalent).

DESNZ 2023 emissions factors¹² and embodied carbon data from the University of Bath Inventory of Carbon and Energy (ICE)¹⁵ are used as the primary data sources for calculating GHG emissions. Where data is not available, a qualitative approach to addressing GHG impacts will be followed using professional judgement, in line with the IEMA guidance for assessing GHG emissions in EIA¹⁶.

Sensitivity

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 their 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 Agreement¹⁷ and the climate science community.

Magnitude of the Impact

For the lifecycle GHG impact assessment, the magnitude of impact considers the output of the GHG quantification process i.e. the Proposed Development's GHG lifecycle footprint, in the context of its contribution to the UK carbon budgets and the possible impact of the Proposed Development on meeting the net zero targets.

¹³ British Standards Institution (BSI). BS EN 15804. Sustainability of construction works. Environmental products declarations. Core rules for the product category of construction products. Available at: <https://knowledge.bsigroup.com/products/sustainability-of-construction-works-environmental-product-declarations-core-rules-for-the-product-category-of-construction-products-2?version=standard>

¹⁴ WRI, World Resource Institute and World Business Council for Sustainable Development GHG Protocol Corporate Accounting and Reporting Standard, 2015. [Available online] Corporate Standard | GHG Protocol

¹⁵ University of Bath, 2019. Bath Inventory of Carbon and Energy (ICE). Available at: <https://circularecology.com/embodied-carbon-footprint-database.html>

¹⁶ Institute for Environmental Management and Assessment (IEMA), 2022. Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance – Second Edition. Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010056/TR010056-001649-Climate%20Emergency%20Planning%20and%20Policy%20-%20Appendix%20A%20-%20IEMA%20Guide-%20Assessing%20Greenhouse%20Gas%20Emissions%20and%20Evaluating%20their%20Significance,%20Version%202,%20Feb%2022.pdf>

¹⁷ United Nations, 2015. The Paris Agreement. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement>



GHG emissions will also be contextualised against sectoral budgets as defined by the Carbon Budget Delivery Plan published by the UK Government¹⁸.

According to the IEMA guidance on assessing GHG emissions in EIA¹⁶, “GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit, as such any GHG emissions or reductions from a project might be considered to be significant”.

The UK carbon budgets are in place to restrict the amount of GHG emissions they can legally emit in a five-year period. The UK is currently in the 4th Carbon Budget period, which runs from 2023 to 2027, as detailed in Table 4. The 3rd, 4th, and 5th Carbon Budgets reflect the previous 80% reduction target by 2050. The 6th Carbon Budget is the first to align with the legislated 2050 net zero commitment.

Table 4 UK National and Sectoral Carbon Budgets and Indicative Carbon Budgets Based Upon the CCC's Balanced Net-Zero Pathway

Carbon Budget	UK Carbon Budget (MtCO ₂ e)	Indicative Carbon Budgets based upon the CCC's balanced net-zero pathway (MtCO ₂ e)
3 rd (2018-2022)	2,544	-
4 th (2023-2027)	1,950	-
5 th (2028-2032)	1,752	-
6 th (2033-2037)	965	-
7 th (2038-2042)	-	526
8 th (2043-2047)	-	195
9 th (2048-2050)	-	17

To illustrate the Proposed Development's trajectory towards net zero by 2050, the CCC's Balanced Net Zero Pathway will be utilised post-2037 in the absence of any nationally legally binding carbon budgets after using the 6th Carbon Budget. The CCC is expected to advise the UK on the level of its 7th Carbon Budget in early 2025. Beyond 2050, it is implied that the UK will remain at net zero.

The CCC Balanced Net-Zero pathway is divided into 5-year periods post-2037 to match the previous six 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-degree trajectory as detailed in Table 4.

It should be noted that the supplementary carbon budgets beyond 2037 have not been formally adopted by the UK government or 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.

Scale and Significance of Effects

When evaluating the scale and significance of the GHG emissions, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The scale of a project's emissions should therefore be based on its net impact over its lifetime, which may be beneficial, adverse or negligible. The crux of scale 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.

The different significance levels will be applied as per the latest version of the IEMA guidance which 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”. Major or moderate adverse effects and beneficial effects are considered to be significant. Minor adverse and negligible effects are not considered to be significant.

¹⁸ UK Government, 2023. Carbon Budget Delivery Plan. Available at: <https://www.gov.uk/government/publications/carbon-budget-delivery-plan>



Potential Significant Effects

The impact of the Proposed Development is defined as the variance in GHG emissions in the global atmosphere. Increasing GHG emissions contributes to global warming and climate change. Disruption to the global climate is already having diverse and wide-reaching impacts on the environment, society, economy, 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.

The construction (including enabling) and operation phases of the Proposed Development are scoped into the lifecycle GHG impact assessment. Decommissioning of the proposed development has been excluded due to the long operational timeframes. It is envisaged that decommissioning and demolition activities would be undertaken as part of a separate planning application and well into the future when the UK will have met its legally binding net zero target.

Enabling, Demolition and Construction

To assess the magnitude of emissions, GHG-emitting activities need to be identified and emissions estimated.

Table 5 below shows the key anticipated GHG emission sources during the construction of the Proposed Development.

Table 5 Key Anticipated GHG Emissions Sources – Enabling, Demolition and Construction

Lifecycle Stage	Activity	Primary Emission Sources
Pre-construction stage	Enabling works.	Vehicles and fuel use for generators on site. Workers travelling to/from site.
	Land clearance.	Loss of carbon sink.
Product stage	Raw material extraction and manufacturing of products required.	Embodied GHG emissions.
Construction process stage	On-site construction activity. Transport of construction materials. Transport of construction workers. Disposal of any waste/water generated by the construction processes.	GHG emissions from vehicle/plant use. GHG emissions from disposal of waste/water.

Completed Development

Table 10 below shows the key anticipated GHG emission sources during the operation of the Proposed Development.

Table 6 Key Anticipated GHG Emissions Sources - Operation

Lifecycle Stage	Activity	Primary Emission Sources
Operation stage	Operation of the Proposed Development.	GHG emissions are from energy consumption, the provision of potable water, and the treatment of wastewater. Water supply and treatment will also be assessed in the context of overall GHG emissions of the Proposed Development's lifecycle. Carbon RICs benchmarks based on dwelling types may be used where data is not available.
	Maintenance of the Proposed Development.	GHG emissions associated with the repair, maintenance and refurbishment of the Proposed Development during its lifetime.

The net increase in GHG emissions during operation will be calculated by comparison to the existing, baseline emissions.



Scope for Mitigation

The scope for mitigating climate change effects as a result of the Proposed Development will be determined during the completion of the lifecycle GHG impact assessment. Mitigation will focus on measures to reduce GHG emissions from the construction and operational stages. Mitigation of emissions will be considered in terms of how they align with the Government's target to achieve net zero emissions by 2050 and remain so thereafter (any emissions beyond this date should thus be balanced by removals). For example, this may include defining design principles with the purpose of reducing embodied carbon associated with materials.

Cumulative Effects

As set out in the IEMA guidance, *"GHG emissions from all projects will contribute to climate change; the largest interrelated cumulative environmental effect"*. This statement relates to 'cumulative' on a global scale as all emissions of GHG's contribute to climate change. The definition of 'cumulative effects' in the context of greenhouse gases and climate change therefore goes far beyond the typical definition of cumulative effects for EIA, which tends to focus on other proposed projects in the vicinity of the Proposed Development. The GHG assessment is therefore intrinsically a cumulative assessment and no consideration to specific local cumulative schemes is required.



TRAFFIC AND MOVEMENT

It is considered that there is the potential for likely effects relating to traffic and movement and so this topic shall be **SCOPED IN** to the EIA. The traffic and movement assessment will be undertaken by KMC Transport Planning ('KMC') Limited.

The ES shall:

- Define the traffic and movement baseline conditions;
- Identify relevant traffic and movement receptors;
- Assess:
 - the potential for traffic and movement impacts throughout the enabling, demolition and construction works and as a result of the completed development during its operation and resultant traffic and movement effects;
 - the likely significant traffic and movement effects;
 - any required mitigation or monitoring to address any likely significant adverse traffic and movement effects; and
 - the potential for cumulative effects in relation to traffic and movement with other agreed upon Committed Developments in the surrounding area.

Baseline Conditions

Current Baseline Conditions

The site covers a total area of approximately 131.5ha and is located centrally at National Grid Reference TL 421606. Cambridge City Centre is located approximately 2km to the south-east of the site at its nearest point. The site is adjacent to the emerging settlement of Eddington. Vehicular access to the site can be gained via either Huntingdon Road to the north or Maddingley Road to the south of the site or Oldfield Road to the west of the site. Both roads are linked via Eddington Avenue which traverses the site.

There are existing footways alongside all local roads, as well as a range of dedicated cycling facilities. Eddington Avenue has dedicated verge segregated cycleways adjacent to both sides of the carriageway. To the north, these cycleways connect into the existing cycleway on Huntingdon Road (A1307). To the west, this cycleway is near continuous for approximately 4.8km and provides connectivity towards Bar Hill. To the east, this cycleway provides direct connectivity to Cambridge City Centre and connects with the wider city cycle network. To the south of Eddington Avenue, the cycleways adjacent to both sides of the carriageway connect with the existing cycleways on Maddingley Road (A1303). To the west, this cycleway continues for approximately 5.7km directly to Hardwick. To the east, the cycleways continue directly into Cambridge City Centre as a mixture of on-road and off-road verge separated cycleways and connect with the wider city cycle network.

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 Maddingley Road between the M11 southbound on-slip and the West Cambridge Development and runs at a north-south bearing.

Maddingley Road Park and Ride is located immediately south of the site off Maddingley 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 Maddingley Road Park and Ride.

Cambridge Railway Station is located approximately 3.5km from the closest point of the site to the south-east 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. Cambridge North Railway Station is also located approximately 4.0km north-east of the site.

In terms of the highway network, the site is located to the south of Huntingdon Road (A1307), which runs at an east-west bearing adjacent to the site, and links to the strategic road network approximately 2km to the west at Junction 31 of the M11. To the east, Huntingdon Road provides connectivity to Cambridge City Centre as well as to the A14 to the north via Cambridge Road (B1409). The site is also located to the north of Maddingley Road (A1303), which runs at an east-west bearing adjacent to the site. Approximately 3.8km to the west, Maddingley Road provides a connection to the A428. To the east, Maddingley Road provides a connection to Cambridge City Centre.

Baseline data presented within the traffic and movement ES chapter to be prepared will be obtained from a number of sources, including:

- Vehicle, pedestrian and cycle movements will be obtained through existing or commissioned surveys at key locations in the vicinity of the site, which will be agreed with CCC as the Local Highway Authority;
- Traffic speed surveys at key links on the local highway network;
- Public Rights of Way from the Definitive Map and Definitive Statement;
- Historical traffic data from the Department for Transport (DfT) and previous surveys;
- Site visits;
- Topographical surveys;
- Existing Eddington residential surveys;
- Desktop research (e.g., OS mapping); and
- Personal Injury Collision (PIC) data obtained from Cambridgeshire County Council.

Future Baseline Conditions

Future baseline conditions will be considered within the traffic and movement chapter of the ES. The future baseline conditions will be calculated by applying the relevant Trip End Model Presentation Programme (TEMPPro) growth factor. TEMPPro is the industry standard tool for estimating traffic growth in forecast assessment years, which is required when assessing the traffic impact of a development on the local highway network.

The growth factor will be applied to the baseline scenario and / or through the application of specific development information gathered from approved planning applications. The future baseline will also include committed infrastructure improvements within the traffic and movement study area.

Receptors

Receptors of potential effects associated with the Proposed Development can be people, wildlife, or elements of the natural and building environment. In the context of the ES chapter, both existing and introduced receptors are considered to be users of the transport networks to whom the transport effects of the Proposed Development from its enabling, demolition, construction, and operation would be perceptible.

The users of the transport networks are considered to be:

- Non-motorised users using the highway and PROW networks (pedestrians, cyclists and equestrians); and



- Drivers and passengers of motorised vehicles (including public transport and emergency services) using the highway network

Alongside this, 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.

The receptors to be considered within the ES chapter will be subject to a finalised study area, as to be discussed with the relevant authorities and bodies. This will take place as part of the Transport Assessment Scoping exercise with the LPA.

Potential Effects

Enabling, Demolition and Construction

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

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

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

Phasing

The Proposed Development is proposed to be phased across an approximate 10-year period. As part of this ES chapter, an interim year will also be considered which includes a worst-case scenario of construction traffic in addition to traffic associated with completed occupations.

Completed Development (Operational)

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

The following potential likely significant traffic and movement effects once the Proposed Development is complete and operational have been identified and will be assessed in the ES:

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

Given the outline nature of the planning application for the Proposed Development, the assessment will be based upon the maximum development quantum and operational traffic will therefore be based upon a reasonable worst-case scenario.

Assessment Methodology

The assessment will consider the potential environmental transport effects of the Proposed Development on the local road network, public transport, cycle and pedestrian movements. The assessment of impacts will follow the Institute of Environmental Management and Assessment (IEMA) Guidelines¹ in terms of the sensitivity of receptors and the magnitude of impact. Where there are no thresholds of significance available, in such instances, interpretation and professional judgment would be applied based on knowledge of the site and past

¹ Institute of Environmental Management and Assessment, 2023; *Environmental Assessment of Road Traffic*.



experience. National Highways (August 2020) Design Manual for Roads and Bridges LA 101 – 104, 112 and 120 will also inform the assessment.

Study Area

The extent of the study area for assessment in terms of traffic and movement will be subject to discussion with National Highways and Cambridgeshire County Council, who are responsible for the local highway network. The study area will be defined by identifying the likely routes that may be used by construction traffic and workers travelling to the site during construction and operation of the Proposed Development. Within the study area, specific links that connect the site to the highway network will be identified that will form the basis of the assessment. Each link within the study area will be used to consider the magnitude of change arising from the Proposed Development, the relative sensitivity of the link with reference to the resultant significance of any effect.

Screening Criteria

Following on from the determination of the study area for this chapter of the EIA, an initial screening exercise will be undertaken to remove road links where the traffic effects of the Proposed Development are not considered to be significant.

Within the IEMA Guidelines, two broad rules are suggested that can be used as criteria to assist in limiting the scale and extent of the environmental impact assessment:

- Rule 1: Include highway links where the traffic flows would increase by more than 30% (or the number of HGV's would increase by more than 30%); and
- Rule 2: Include highway links of high sensitivity where traffic flows have increased by 10% or more.

The IEMA Guidelines state that a 30% change in traffic flow, pertinent to Rule 1, represents a reasonable threshold for including a highway link within an environmental assessment. Under Rule 2, the IEMA Guidelines state that it would not be appropriate to consider links where traffic flows are forecast to change by less than 10%, unless there are significant changes in the composition of traffic (e.g., large number of HGV's).

Road links within the study area that do not meet the above IEMA thresholds will be considered to have non-significant effects on transport and will be scoped out of any further assessment.

Traffic Effects to be Assessed

In accordance with the IEMA Guidelines, the traffic and movement effects that will be assessed and presented in the ES are as follows:

- Severance of communities;
- Non-motorised user delay;
- Non-motorised user amenity;
- Fear and intimidation on and by road users;
- Road vehicle driver and passenger delay;
- Road user and pedestrian safety; and
- Large loads (including abnormal loads).

The following are proposed to be scoped out of the assessment given the nature of the development proposed:

- Hazardous loads.

Sensitivity of Receptors

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. Alongside this, the sensitivity of a receptor can also be the 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.



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.

Assessing Traffic Effects

The following methodologies and assumptions will be applied to assess the likely traffic effects of Proposed Development. These will be applied to the highway links that meet the IEMA initial sifting criteria outlined above.

Severance of Communities

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.

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.

Different groups in a community may be more affected by severance than others. Accordingly, consideration of severance will relate to:

- The nature of transport infrastructure on any assessed link (for example type and speed of road, availability of crossing facilities);
- The characteristic of movements on that link (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).

The effect the Proposed Development may have on receptors on any transport link can be 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.

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'.*

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 full regard to specific local conditions outlined above.

Non-Motorised User Delay

Changes in the volume, composition and / or speed of traffic may affect the ability of people to cross roads or travel along transport links. Typically, increases in traffic levels would be the main cause in increased delays, although increased non-motorised user activity itself can also contribute.

The IEMA Guidelines identifies that there are a range of factors that can influence delay and this might vary dependent upon whether a location is within an urban or rural environment. Accordingly, the Guidelines do not set down definitive thresholds where it is instead suggested that *'the competent traffic and movement expert use their judgement to determine whether pedestrian delay constitutes a significant effect'.*

The IEMA Guidelines state that *'Pedestrian delay and severance are closely related effects and can be grouped together'.* Accordingly, the changes in traffic flows identified for severance of communities will be applied where considering non-motorised user delay.

The above approach is deemed a robust starting point for narrowing down affected links within the Study Area. Thereafter, judgements against the characteristics of transport links, receptor sensitivity and infrastructure provision can be made.

Non-Motorised Amenity

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.'*

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 HGV component) is halved or doubled.



The thresholds will be used as a starting point for any assessment of a link which will then give regard to specific local conditions. The methodology will use the defined threshold making further judgments based upon this and the wider consideration of infrastructure

Fear and Intimidation on and by Road Users

The IEMA Guidelines identify that fear and intimidation is dependent upon a number of factors including traffic volumes and speeds, composition and the proximity of road users to traffic as a factor of infrastructure that is in place. It is stated in paragraph 3.36 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'.*

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.

The approach outlined in the IEMA Guidelines will be used to assess any effects relating to fear and intimidation on non-motorised road users.

Road Vehicle Driver and Passenger Delay

Traffic delays to non-development traffic can occur at several points on transport networks. The IEMA Guidelines set out 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.

Proportional and absolute increases in traffic numbers provide an indication of likely effects upon driver delay. Such assessment will 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.

The assessment of vehicle driver and passenger delay will be undertaken through consideration of proportional and absolute impacts, judgments of highway network performance and through the scope of the Transport Assessments to be agreed with relevant highway authorities. Any highway capacity assessment will use appropriate junction modelling packages to provide an estimate of vehicle delay and determine the sensitivity to development traffic.

Road User and Pedestrian Safety

Collision clusters within the Study Area will be identified by undertaking a detailed review of the baseline characteristics to determine the road safety sensitivity of the highway network. The assessment will be based on an analysis of personal injury collision data occurring within the most recent 5 years.

Patterns or road safety factors that could be exacerbated by traffic or movement will be identified and considered in the context of construction movements strategies, their managements and the temporary nature of effects.

Determining the Significance of Effect

Receptor Sensitivity

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.

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.

The sensitivity of highway links with regard to infrastructure and the receptors on those links are set out in Table 1 which has been prepared with reference to the high-level detail set out in paragraph 1.30 of the IEMA Guidelines.



Table 1 Sensitivity of Receptor

Receptor Sensitivity	Receptor Type
High	Receptors of greatest sensitivity to traffic flows, such as schools, hospitals, playgrounds/recreational spaces, accident blackspots, retirement/nursing homes. Includes areas with no footways with high pedestrian footfall and congested areas.
Medium	Receptors with moderate sensitivity to traffic flow, such as conservation areas, historical buildings, tourist attractions, and residential areas.
Low	Receptors with low sensitivity to traffic flows, and those distant from affected roads.
Negligible	Receptors with no material sensitivity to traffic flows.

Magnitude of Impact

For those links that are not screened out of the assessment using Rules 1 and 2 of the IEMA Guidelines, the criteria set out in Table 2 will be used to determine the magnitude of impacts. The criteria are based upon the IEMA Guidelines, and in the case of non-motorised user delay and amenity, has been adapted and added to in order to allow a suitable assessment of the Proposed Development and associated effects.

In addition, it is important to note that impacts during construction and operation are not permanent but are temporary and this is material when considering the impact magnitude criteria attached to them

Table 2 Magnitude of Impact Criteria

Criteria	Magnitude of Impact				
	High	Medium	Low	Negligible	Neutral
Severance of communities	Change in total traffic or HGV flows of >90%	Change in total traffic or HGV flows of >=60 and <90%.	Change in total traffic or HGV flows of >=30 and <60%.	Change in total traffic or HGV flows of > 0 and <30%	No Change
Driver delay	Changes which are likely to be perceptible and which could change conditions which would otherwise prevail to the extent that it would significantly affect travel behaviour.	Changes which are likely to be perceptible and which would materially change conditions which would otherwise prevail to the extent that it may affect travel behaviour to measurable degree.	Changes which are likely to be perceptible but not to the extent that it would materially change conditions which would otherwise prevail.	Changes which are unlikely to be perceptible (based on a judgement).	No Change
Non-motorised user delay					No Change
Non-motorised user amenity	Magnitude of impact is based on professional judgement regarding the “pleasantness” of a journey and is affected by the composition, speed or volume of traffic introduced as a result of the Proposed Development. The IEMA Guidance suggests that assessors use their judgement to determine whether pedestrian amenity is a significant effect and as such, the magnitude of change for pedestrian amenity has been defined qualitatively based on professional judgement.				No Change
Fear and intimidation on and by road users	As IMEA guidance: Two step changes in level	One step change in level, but with • >400 vehicle increase in average 18hr two-way all vehicle flow; and/or • >500 increase in total 18hr heavy vehicleflow	One step change in level, with • <400 vehicle increase in average 18hr two-way all vehicle flow; and/or • <500 increase in total 18hr heavy vehicle flow	No change in step changes	No Change
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 Proposed Development.	No change	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 Proposed Development.	No Change



Hazardous Abnormal Loads /	Magnitude of impact to be based on professional judgement, frequency and size of abnormal loads and consideration of wider traffic effects.	No Change	Hazardous / large loads	Magnitude of impact to be based on professional judgement, frequency and size of abnormal loads and consideration of wider traffic effects.	No Change
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Significance of Effects

The effect of the Proposed Development with regards to traffic and movement will be determined with due regard to the sensitivity of the receptor and magnitude of impact. The significance of effect matrix for traffic and movement is shown in Table 3.

Table 3 Significance of Effect Matrix

Magnitude of Impact	Sensitivity of Receptor			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Minor
Low	Moderate	Minor	Minor	Negligible
Negligible	Minor	Minor	Negligible	Negligible
Neutral	No effect	No effect	No effect	No effect

Following the classification of an effect, a clear statement will be made as to whether the effect is 'significant' or 'not significant'. As a general rule, major and moderate effects are considered to be significant and minor and negligible effects are considered to be not significant.

The IEMA Guidelines state in paragraph 1.13 that '*these updated and replacement 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.*' Further, paragraph 1.27 of the guidance states that assessments '*should consider the forecast changes to baseline (magnitude of change/ impact), the relative value/sensitivity/importance of the affected asset/receptor and the scale, nature and significance of the effect (consequence)*'.

Professional judgement will be applied where appropriate as well as consideration of absolute level of traffic in combination with the percentage change in traffic.

Cumulative Effects

The cumulative effects of the Proposed Development in combination with the cumulative schemes will be assessed, taking account of the relevant transport mitigation measures related to those cumulative schemes. This will include the assessment of the effects on traffic and movement by public transport, cyclists and pedestrians.

For the assessment of completed development vehicular trips, relevant cumulative development will be considered as a separate scenario of the future baseline assessment as outlined below.

Assessment Scenarios

In consideration of the above, the following assessment scenarios will be considered within this traffic and movement EIA chapter.

- Existing Baseline;
- Existing Baseline + Peak Construction Traffic;
- Future Baseline + Proposed Development; and
- Future Baseline + Proposed Development + Cumulative Developments.

The planning application for the Proposed Development will also be accompanied by a Transport Assessment, Travel Plan, Delivery and Servicing Plan, and the key aspects for a Construction Management Plan (CMP). It is anticipated that the CMP will form a requirement of a planning condition.



Summary

A summary of the proposed scope of the traffic and movement ES chapter is included in Table 4.

Table 4 Traffic and Movement Scoping Summary

Development Phase	Assessment Criteria	Scoped In Or Out
Construction Phase	Severance of communities	In
	Non-motorised user delay	In
	Non-motorised user amenity	In
	Fear and intimidation on and by road users	In
	Road vehicle driver and passenger delay	In
	Road user and pedestrian safety	In
	Large loads (where this relates to abnormal loads)	In
	Hazardous loads	Out
Full Development / Operational phase	Severance of communities	In
	Non-motorised user delay	In
	Non-motorised user amenity	In
	Fear and intimidation on and by road users	In
	Road vehicle driver and passenger delay	In
	Road user and pedestrian safety	In
	Large loads (where this relates to abnormal loads)	Out
	Hazardous loads	Out

WATER RESOURCES, FLOOD RISK AND DRAINAGE

It is considered that there is the potential for likely significant effects relating to water resources, flood risk and drainage and so this topic shall be **SCOPED IN** to the EIA. The water resources, flood risk and drainage ES chapter will be undertaken by AECOM Ltd.

The ES shall:

- Define the water resources, flood risk and drainage baseline conditions;
- Identify relevant water resources, flood risk and drainage receptors;
- Assess:
 - the potential for water resources, flood risk and drainage impacts throughout the enabling and construction works and as a result of the completed development and resultant water resources, flood risk and drainage effects;
 - the likely significant water resources, flood risk and drainage effects;
 - any required mitigation or monitoring to address any likely significant adverse water resources, flood risk and drainage effects; and
 - the potential for cumulative effects in relation to water resources, flood risk and drainage with other agreed upon schemes in the surrounding area.

Baseline Conditions

Current Baseline Conditions

The site comprises of a mixture of hardstanding and greenfield areas including fields, existing residential properties, etc., bound by Huntingdon Road to the north, the M11 to the west, and Madingley Road (A1303) to the south. The following areas located within the planning boundary have no proposed works and hence have been scoped out of this study:

- Madingley Road
- Madingley Link
- Phase 1 Plots
- Eddington Cricket Field
- Ridge and Furrow Field
- Huntingdon Road Link
- Northern Sports Pitches near Huntingdon Junction

The topography of the site is characterised by a plateau on the north-eastern side of the site which then falls to the south-west towards Washpit Brook. Existing site levels are approximately 12.3m Above Ordnance Datum (AOD) and 14.5m AOD along the Washpit Brook, which rise to a maximum of 25m AOD within the north-eastern part of the site, where a plateau extends along the northern edge of the site. To the north of this plateau, ground



falls gently in a northerly direction away from the Washpit Brook and towards Huntingdon Road. The levels of Phase 1 of the 2013 OPP, as consented in 2013 (Planning Reference: 11/1114/OUT), were designed to replicate the existing site levels.

An existing watercourse, Washpit Brook, passes across the site, from south-east of the site to north-west.

A flood alleviation scheme has been implemented within the OPP site as part of the Phase 1 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. The scheme includes a flow control structure (a weir and a low flow pipe) to reduce downstream peak flow and a two stage channel upstream of the flow control structure to store excess flow generated by the provision of the online flow control structure. The two stage channel falls towards a low flow channel along the western edge to allow drainage of any stored floodwater back to the Washpit Brook via a 1m diameter pipe culvert beneath the maintenance access track.

The geology underlying the north-east and south-east of the site consists of head clay, silt, sand and gravel superficial deposits which is classed as Secondary Undifferentiated Aquifer. 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. The remainder of the site is classed as unproductive strata. In terms of bedrock, the site is fully underlain by Gault Formation mudstone, as shown in Figure 1, and is classed as unproductive strata.

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.

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

The site is largely subject to medium-low and unproductive groundwater vulnerability. A small area to the east of the site is subject to medium-high and high groundwater vulnerability.

The site is located largely within Flood Zone 1, as shown in Figure 2. 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.

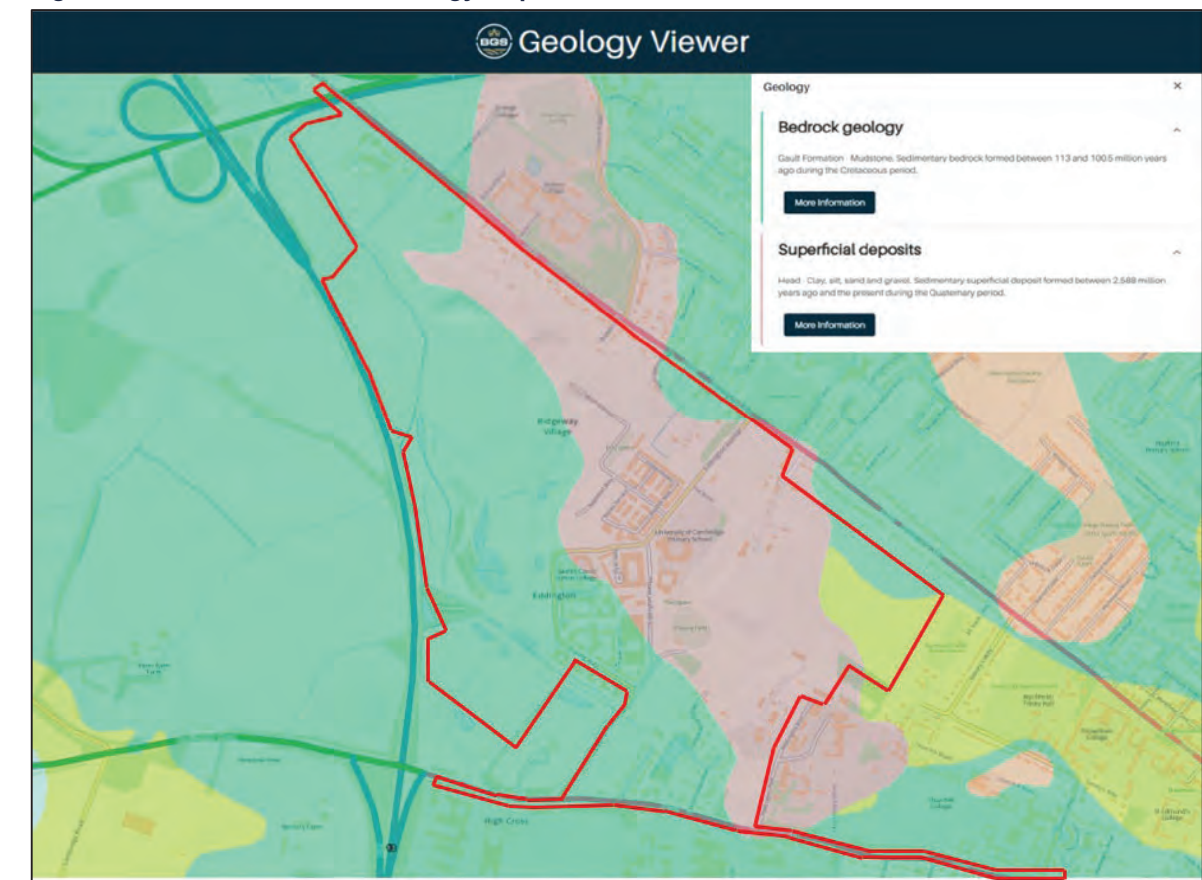
The site is subject to various levels of risk ('Very Low' to 'High') from surface water flooding as shown in Figure 3, but is predominantly subject to 'Very Low' risk.

The site is in an area which is not at risk of flooding from reservoirs

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 diameter of between 9" and 300mm. 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 records also indicate a 300mm diameter vitrified clay surface water sewer from west to east along Madingley Road. The existing drainage on the site exists as part of the constructed Phase 1 of the 2013 OPP. The foul water drainage from Phase 1 drains to the publicly owned 1200mm foul trunk sewer in Madingley Road via an onsite foul pumping station, and the Phase 1 surface water drainage drains to a lagoon on the Western Edge before discharging to the Washpit Brook at greenfield runoff rates.

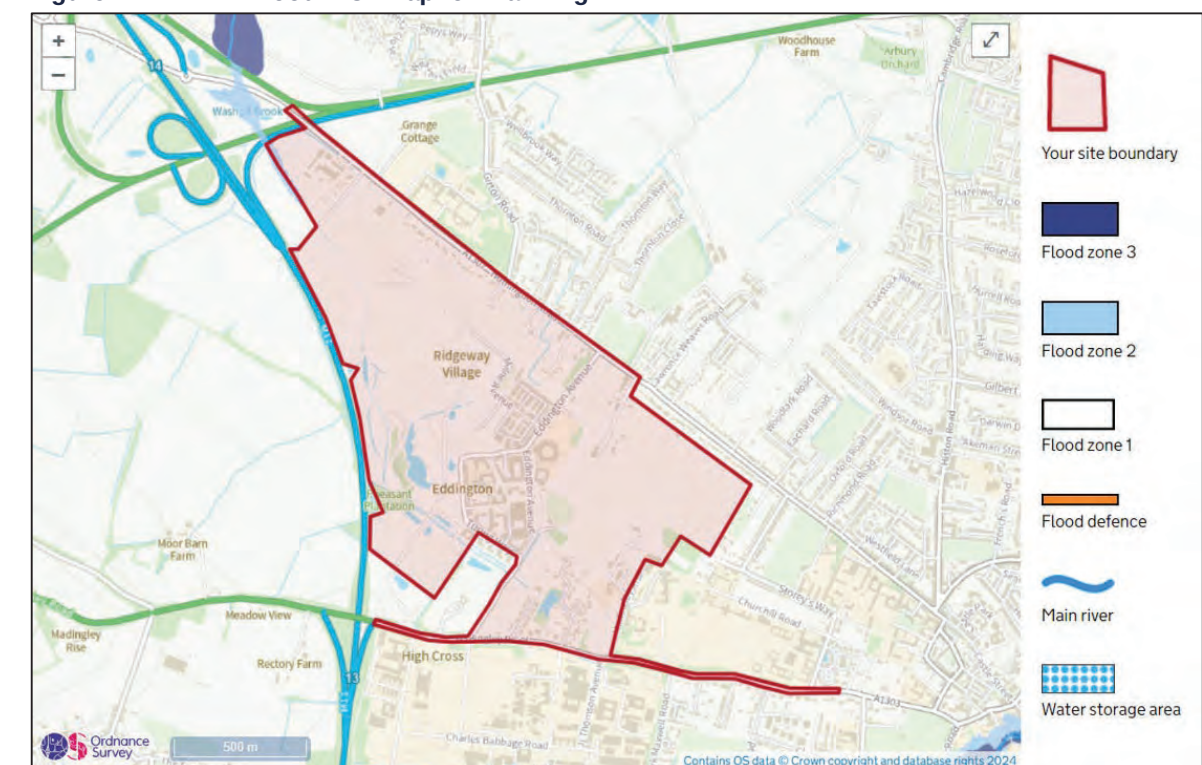


Figure 1 BGS Bedrock Geology Map¹



Source: British Geological Survey

Figure 2 EA Flood Risk Map for Planning¹

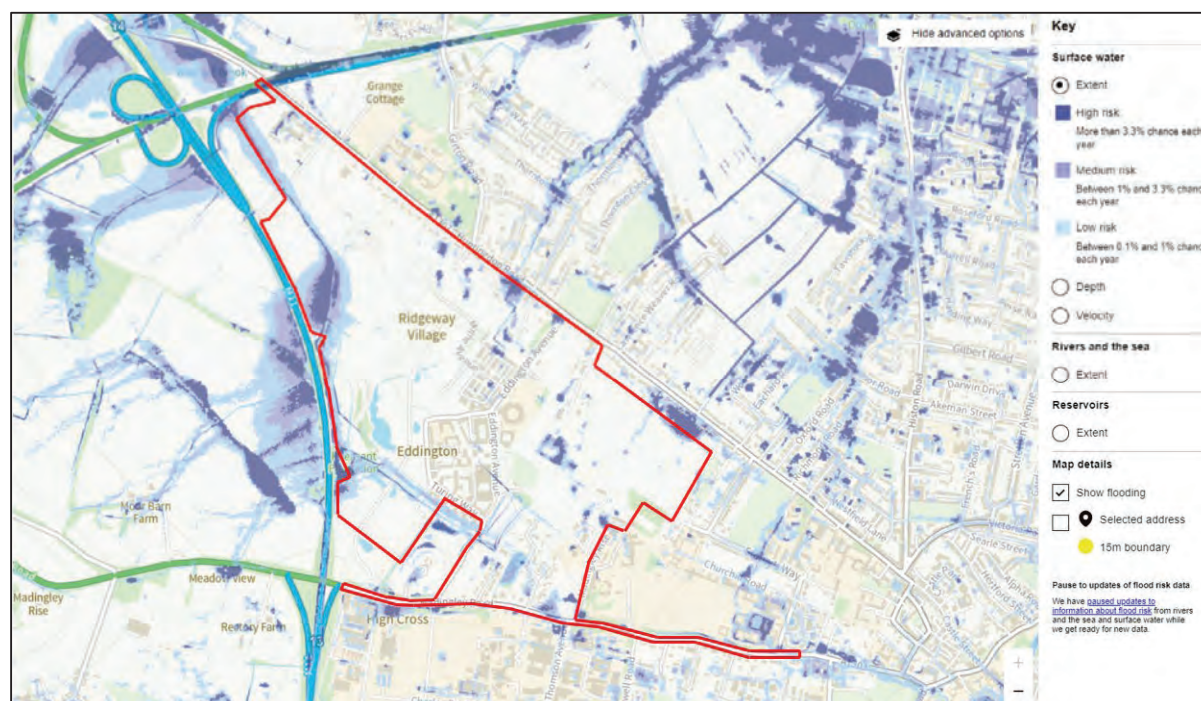


Source: Environment Agency

¹ 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 2 of the main report) are not included for illustration purposes.



Figure 3 Surface Water Flood Risk¹



Source: Environment Agency

Future Baseline Conditions

The water resources, flood risk and drainage ES chapter will outline the state of the baseline conditions in future if the Proposed Development was not implemented including identification of any new receptors if the Proposed Development were to be implemented.

Receptors

The receptors to be considered in the water resources, flood risk and drainage assessment will be:

- Washpit Brook;
- Surface Water;
- Groundwater;
- Existing Site (flood risk to existing site);
- Proposed Development (flood risk to and from Proposed Development).

Potential Effects

Enabling, Demolition and Construction

During the enabling, demolition and construction works, the potential impacts on receptors would be:

- Washpit Brook
 - Pollution from hazardous substances used / stored;
 - Siltation due to runoff from areas of exposed earthworks; and
 - Increased runoff from works.
- Surface Water
 - Surface water and public drainage networks may be prone to flood risk due to increased contaminants, silts and other debris causing pipe blockages;
 - Increased discharge (rate and volume) to the public sewer during the enabling, demolition and construction phase may increase the risk of network capacity exceedances; and



- The enabling, demolition and construction works may impact the existing site levels resulting in localized surface water ponding during extreme rainfall events.
- Groundwater
 - Below ground construction may expose shallow ground water and therefore may increase the risk of groundwater flooding; and
 - Potential contamination of exposed groundwater from enabling, demolition and construction works.
- Existing Site
 - Potential of increase in localized flood risk during construction phase.

Completed Development

Following the completion of the Proposed Development, it is likely that potential impacts on receptors without mitigation would be:

- Washpit Brook
 - Untreated surface water discharge to Washpit Brook; and
 - Increased surface water discharge (rate and volume) to Washpit Brook resulting in potential increase in flood risk.
- Surface Water
 - Increase in surface water runoff and volume as a result of increased hardstanding areas;
 - Potential contamination of surface water runoff from vehicle
- Groundwater
 - Increase in groundwater level during extreme rainfall events resulting in potential groundwater flooding.
- Existing Site
 - Increased flood risk due to changes to surface water flow paths and insufficient surface water drainage capacity.
- Proposed Development
 - Increased flood risk due to changes to surface water flow paths and insufficient surface water drainage capacity; and
 - Increase in offsite flood risk as a result of the proposed development.

Assessment Methodology

Site specific desk-based assessments will be undertaken to establish the baseline conditions and potential effects of the Proposed Development on water resources, flood risk and drainage receptors during the enabling, demolition and construction and post completion phase of the development.

The assessment will be carried out in parallel with the ground conditions and land contamination assessment (see **Annex D: Scoped In Topic Sheets – Ground Conditions and Land Contamination**) as they are closely interrelated.

The assessments will identify potential impacts to both on and off-site receptors based on a review of the published data, including the industry standards, and relevant guidance and policy summarised below. The assessment will consider measures to minimise flood risk, such as the use of sustainable drainage systems (SuDS), water efficiency methods and consideration of best practice guidance. Where there remains the potential for residual adverse effects on water resource, flood risk and drainage, recommendations will be made for mitigation measures to reduce such effects. Any residual effects will be identified as well as the potential for cumulative effects associated with other developments nearby.

When reporting the significance of the effects, the sensitivity and impact criteria will be based on the published assessment criteria set out in the Department for Transport Analysis Guidance (TAG) Unit 3.



Basis of Assessment

The water resources, flood risk and drainage ES chapter will include a review and summary of relevant legislation and national, regional and local planning policy relevant to the water environment, including but not limited to:

- Water Act 2014;
- Water Resource Act 1991
- Land Drainage Act 1991
- Flood and Water Management Act 2010
- Flood Risk Regulation 2009
- Revised National Planning Policy Framework (NPPF) 2012
- Planning Practice Guidance
- National Standards for Sustainable Drainage Systems 2016
- Cambridge and South Cambridgeshire Level 1 Strategic Flood Risk Assessment 2010

In addition to the relevant policies, the following sources of information will be reviewed and form the basis of the qualitative assessment of the likely significant effects on water resources, flood risk and drainage:

- Masterplan layout (including any associated parameter plans);
- Surface water drainage proposals; and
- Flood Risk Assessment and Outline Drainage Strategy (appended to the ES chapter).

Enabling, Demolition and Construction

The assessment of the potential effects on water resources, flood risk and drainage receptors during the enabling, demolition and construction phases will be undertaken and, where relevant, mitigation measures identified.

Some measures will be subject to main contractor's construction methodology and sequence; however, all site work will adhere to Guidance for Pollution Prevention (GPPs) to enable any risk to water resources and flood risk are mitigated correctly and residual effects are therefore not expected to be significant.

Phasing

The potential effects on water resources, flood risk and drainage will be considered against the phasing of the Proposed Development along with consideration of links between the phases as relevant.

Completed Development

The assessment of potential effects on water resources, flood risk and drainage as a result of the completed development will be undertaken and, where relevant, mitigation measures will be identified. Both the FRA and the water resources, flood risk and drainage ES chapter will consider the completed development once occupied.

A site-specific level 2 FRA will be prepared based on qualitative assessment of the flood risk information obtained from relevant stakeholders. The FRA will show that the development will be designed in line with policy and best practice regarding flood risk. This includes allowances for climate change.

The outline drainage strategy will identify measures to incorporate SuDS measures inline with policy and best practice guidance, ensuring runoff does not exceed pre-development levels and the local public sewerage networks have sufficient capacity. This includes an allowance for climate change.

Cumulative Effects

Cumulative residual effects will be assessed to consider the potential in-combination impacts of the Proposed Development and other nearby identified cumulative schemes (as relevant) on water resources, flood risk and drainage receptors and will cover both enabling, demolition and construction and operational effects.



It is expected that the Proposed Development will have the following potential effects in combination with the potential effects of other nearby identified development schemes:

- Surface water: It is anticipated that the design of the Proposed Development will result in discharge rates equal to greenfield runoff rates as a result of on plot surface water attenuation. It is expected that surrounding developments will also provide reduction in surface water discharge rates in line with the latest planning policies.
- Flood risk: All developments, including the Proposed Development, must ensure there are no off-site impacts with regards to flood risk. On this basis, it is anticipated that the designs of cumulative schemes will mitigate the risk of flooding.

ARCHAEOLOGY

It is considered significant effects relating to archaeology are unlikely, and as such this topic is proposed to be **SCOPED OUT** to the EIA. The need for archaeology to be scoped into the EIA has been considered by Trium Environmental Consulting LLP and the University of Cambridge, and the following provides a summary of baseline conditions and clarifies why no likely significant effects are expected.

Baseline Conditions

Current Baseline Conditions

The site extends to approximately 131.5ha in total, of which approximately 37.5ha is in unused undisturbed permanent pasture and approximately 22.4ha is unused grassland, most of which looks to have been subject to previous disturbance. The remainder of the site is largely built out but also includes some open space, recreational ground and a large balancing pond.

The British Geological Survey (BGS) 1:50 000 scale geological map Sheet 188 (Cambridge) and BGS Onshore GeoIndex viewer have been reviewed to assess the underlying geology at the site. 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 in part by Head deposits. River Terrace Deposits are shown to be present to the east of the site;
- 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 southeast of the site; and
- There are no mapped faults or linear geological features within the site boundary.

Archaeological Investigations

The broader archaeological and historical background of the site has been outlined in earlier desktop studies (Redfern, 2001¹), which highlighted the scale of the site's usages during Roman times, and also the extent of 19th century gravel and coprolite quarrying. Limited scale preliminary investigations were undertaken in 2002² and 2008^{3,4}, with major trench-based evaluation undertaken across the site in 2009⁵, in addition to fieldwalking and geophysical surveys.

¹ Redfern, N. 2001. *North West Cambridge: An Archaeological Desk-Based Assessment*. Cambridge Archaeological Unit Report 455.
² Mackay, D., R. Mortimer and C. Evans 2002. *Gravel Hill Farm, North-West Cambridge: An Archaeological Evaluation*. Cambridge Archaeological Unit Report 513.
³ Armour, N. 2008. *North West Cambridge, University Farm, Huntingdon Road, Girton, Cambridge: preliminary trial trench evaluation, 2008*. Cambridge Archaeological Unit Report No. 852.
⁴ Anderson, K. & D. Hall 2008. *North West Cambridge, University Farm: fieldwalking*. Cambridge Archaeological Unit Report No. 862.
⁵ Evans, C. and R. Newman 2010. *North West Cambridge, University of Cambridge: Archaeological Evaluation Fieldwork*. Cambridge Archaeological Unit Report 921.



As a result of these investigations, 12 distinct archaeological areas (Sites I – XII) were identified. The earliest activity to be identified on site was Palaeolithic in date, and consisted of stone artefacts recovered from post-medieval gravel quarries situated in the eastern end of the site. Similarly, a number of Mesolithic and Early Neolithic artefacts were also recovered from similar contexts. A single Late Neolithic and a small number of Late Bronze Age features were identified during the trial trenching (Site II).

By the later/Late Iron Age, occupation was well established within the site, with a minimum of five distinct settlements being present (Sites II, IV-VI & XII). Five Romano-British settlements were also identified during the trial trenching; an Early Roman period farmstead on the south side of Washpit Brook (Site VI); possibly a Late Roman period villa (Site VII), near Madingley Road; and other settlements along the southern side of the ridge's gravels (Sites II, IV & V). Of these, Site IV covers more than 9ha and exhibits both 'Early' and Late Roman period components (and with an Iron Age precursor). Only one archaeological feature yielded Anglo-Saxon material, a pit at Site V on the ridge gravels opposite the cemetery site of that date excavated within the grounds of Girton College. Evidence of the Howes Close medieval settlement (known from documentary records; Site IX) was found, as was evidence related to Cambridge's Medieval West Fields in the form of traces of ridge-and-furrow agriculture and a trackway (Site VIII). Upon the gravel ridge, features relating to a similar medieval routeway and a hedged paddock were found (Sites II & III).

No statutory or locally designated (archaeological) heritage assets lie within the site.

Discussion for Scoping Out

Upon review of previous documentation relating to the 2013 OPP (Reference: 11/1114/OUT), the 2012 ES (which supported the 2013 OPP) included an Archaeology ES chapter which established likely significant adverse archaeological residual effects associated with the 2013 OPP.

As a result of the potential for likely significant adverse archaeological effects identified in the 2012 ES, a number of mitigation measures that were secured by condition have now been implemented for the 2013 OPP consent. This included the following:

Condition 63 (approved pursuant to Planning Reference 11/1114/OUT): *'No development shall take place before the implementation of a programme of archaeological works in accordance with a written scheme of investigation which has been submitted to and approved by the local planning authority. Development within areas identified for archaeological investigation in the approved written scheme shall not commence until the archaeological fieldwork in those areas has been completed and the local planning authority has confirmed in writing that the archaeological fieldwork has been completed satisfactorily. The archive report and publication shall be submitted to the local planning authority within 6 months following completion of the archaeological investigations.'* – Approved for 2013 OPP on 18 March 2021.

The Written Scheme of Investigation (WSI) was submitted to the Greater Cambridge Shared Planning (GCSP) Service on October 2012, which is provided in **Annex H: Written Scheme of Investigation**. The report on the archaeological investigation which discharged this condition of the 2013 OPP was issued to the GCSP on 12 January 2021 which detailed the post-excavation works. This report is provided in **Annex I: North West Cambridge Archaeology Report**.

Mitigation Measures

Given that archaeological mitigation applicable to the site has been implemented via the discharge of the above condition (Condition 63) as part of the 2013 OPP, as confirmed in the report on the archaeological watching brief (**Appendix I**), no further archaeological likely significant effects are considered likely with regards to the Proposed Development and site. Consequently, it is considered that there is no requirement for an archaeological assessment to be undertaken as part of the ES, or for any further archaeological conditions to be secured by way of the planning application / permission for the Proposed Development. Furthermore, no additional planning application deliverables with regards to archaeology (buried heritage) are considered required for the planning application of the Proposed Development.

Conclusion

As such, it is considered that the Proposed Development is not likely to result in likely significant effects on archaeology. Based on the above, it is proposed to **SCOPE OUT** an assessment of the Proposed Development's effects on archaeology.

DAYLIGHT, SUNLIGHT, OVERSHADOWING, SOLAR GLARE AND LIGHT POLLUTION

It is considered significant effects relating to daylight, sunlight overshadowing, solar glare and light pollution are unlikely, and as such this topic is proposed to be **SCOPED OUT** to the EIA. The potential need for daylight, sunlight overshadowing, solar glare and light pollution to be scoped into the EIA has been considered by Trium Environmental Consulting LLP, and the following provides a summary of baseline conditions and clarifies why no likely significant effects are expected.

Baseline Conditions

Current Baseline Conditions

The site currently comprises grassland fields, existing residential properties, playing fields, a Sainsbury's Supermarket, Eddington Cricket Field, cleared construction sites, and also incorporates sections of Huntingdon Road (A1307) and Madingley Road (A1303). Agricultural buildings associated with Howe Farm are located within the north-western extent of the site, along Huntingdon Road.

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.

Discussion for Scoping Out

BRE Guidelines¹ suggest that only neighbouring residential buildings, or other sensitive uses, require consideration in terms of daylight and sunlight. As such, a review of sensitive neighbouring buildings in the surrounding context to the site (including at Phase 1 buildings) has been undertaken which have the potential to be affected in terms of daylight and sunlight. BRE Guidelines also notes that outdoor amenity spaces are sensitive to changes in overshadowing, which are therefore also considered. Commercial spaces such as offices and retail areas are not considered sensitive receptors and are therefore not assessed. Viewpoints along surrounding road junctions also require assessment for potential instances of solar glare.

Daylight, Sunlight and Overshadowing

Given the proposed maximum heights of the buildings of Proposed Development and minimum distances that will be implemented between buildings, it is considered that the Proposed Development is unlikely to give rise to significant residual effects with respect to daylight, sunlight and overshadowing during demolition and construction activities, as well as once operational.

Solar Glare and Light Pollution

When considering the proposed uses, massing and façade design (which will not comprise large areas of highly glazed material), the Proposed Development is not considered likely to give rise to instances of solar glare.

¹ BRE, 2022. *Site Layout and Planning for Daylight and Sunlight 2022: A Guide to Good Practice. Third Edition.*



It is acknowledged that some of the proposed land uses will require artificial lighting to be installed and in operation during hours of darkness which may result in a significant change from existing conditions. An outline lighting strategy, detailing the indicative location, the type and the anticipated LUX levels of the proposed lighting will be set out within **ES Volume 1, Chapter 4: The Proposed Development** and considered qualitatively within the technical assessments (e.g. ecology), as appropriate. Further detailed assessment will be undertaken at the Reserved Matters stage.

Conclusion

As such, it is considered that the Proposed Development is not likely to result in significant effects on daylight, sunlight overshadowing, solar glare and light pollution. Based on the above, it is proposed to **SCOPE OUT** an assessment of the Proposed Development's effects on daylight, sunlight overshadowing, solar glare and light pollution.

HUMAN HEALTH

The impacts on human health have been considered in this scoping report by Quod. The approach used is in line with the EIA Regulations¹. The EIA Regulations require the consideration of the potential effects on human health where health is likely to be significantly affected by the development². The assessment should be proportionate to the project being considered.

IEMA guidance³ goes on to say that the assessment should take place at a population level (or, if relevant, a sub-population level) as distinct from an individual level.

Considering the baseline conditions of the site and surrounding area as well as the scale and nature of the Proposed Development, significant effects relating to Human Health are unlikely, and as such this topic is proposed to be **SCOPED OUT** of the EIA.

Quod will prepare a Health Impact Assessment (HIA) which will be separate to the EIA but will be submitted alongside the planning application.

The sections below provide the context that has informed the decision to scope out a Human Health chapter.

Baseline Conditions

Current Baseline Conditions

The site is approximately 131.5ha and is 2km to the north-west of Cambridge City Centre, at its nearest point. The site includes some parts of the emerging settlement of Eddington, built out under the previous planning permission (the 2013 OPP), including homes, shops and Eddington Square. The site includes disused agricultural fields, existing homes, playing fields, areas of hard standing used for parking, a Sainsbury's Supermarket, Eddington Cricket Field, cleared construction sites, a currently decommissioned storm water recycling system, and also incorporates sections of Huntingdon Road (to the north) and Madingley Road (to the south).

Discussion for Scoping Out

Table 1 below presents each of the "wider determinants of health" that could be relevant to the assessment of human health effects of the Proposed Development. The table considers the existing baseline context at a population or a sub-population level. This approach is based on IEMA's guide to 'Effective scoping of Human Health in Environmental Impact Assessment'⁴ and reflects existing best practice in terms of scope.

¹ HMSO, (2017); *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended)*

² HMSO, (2017); *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended)* Schedule 4, para 4.

³ Pyper, R., Lamming, M., Beard, C., Waples, H., Birley, M., Buroni, A., Douglas, M., Turton, P., Hardy, K., Netherton, A., McClenaghan, R., Barratt, T., Bhatt, A., Fenech, B., Dunne, A., Hodgson, G., Gibson, G., Purdy, J., Cave, B. (2022). *IEMA Guide: Effective Scoping of Human Health in Environmental Impact Assessment*.

⁴ Pyper, R., Lamming, M., Beard, C., Waples, H., Birley, M., Buroni, A., Douglas, M., Turton, P., Hardy, K., Netherton, A., McClenaghan, R., Barratt, T., Bhatt, A., Fenech, B., Dunne, A., Hodgson, G., Gibson, G., Purdy, J., Cave, B. (2022). *IEMA Guide: Effective Scoping of Human Health in Environmental Impact Assessment*.



Table 1 Wider Determinants of Health

Wider Determinants of Health		Consideration
Health Related Behaviours	Physical Activity	The Proposed Development will include new areas (up to 45 ha) of open space and playspace, sports pitches and allotments for existing and future residents and visitors, and active travel measures will also be incorporated which will promote physical activity. The Proposed Development will not result in the net loss of facilities for physical activity. Further consideration of such measures is provided under the relevant sections on Open Space below. Development can provide opportunities for increased physical activity but cannot enforce resident/employee/visitor behaviour. Effects may be beneficial at an individual level but are not likely to be significant at a population or sub-population level.
	Risk Taking Behaviours	The scale and nature of the construction operations, or the end uses, are not likely to increase opportunities for risk taking behaviours for construction workers, new or existing residents. Prior to the commencement of construction works on-site and during the construction phase, a Construction Environmental Management Plan (CEMP) will be prepared and implemented which will include measures to ensure the safety of staff working on site as well as measures to reduce the risk to the general public. Overall, the Proposed Development is not expected to have a significant effect upon risk taking behaviour at the population level or a sub-population level
	Diet and Nutrition	The Proposed Development will include Use Class E floorspace which could be occupied by food or retail uses. The Proposed development is very well located for access to fresh food, amenities, services and sports opportunities within walking distance. Overall, the Proposed Development is not expected to have a significant effect upon diet and nutrition at the population level. Development can provide opportunities for increased access to good food but cannot enforce resident/visitor behaviour. Effects may be beneficial for individuals but are not likely to be significant at a population or sub-population level.
Social Environment	Housing	The proposed homes (up to 4,200 new residential units) will be designed to meet national space standards and will be accessible and adaptable in line with Building Regulations. Delivery of new high-quality homes (including affordable provision) is likely to have a beneficial effect on health, especially for individuals, meeting local housing needs, but at the population level or sub-population such effects are unlikely to be significant.
	Relocation	No existing residents will be displaced as a result of the Proposed Development. The displacement and/or relocation of any existing uses (including employment uses) will be scoped into the Socio-Economic ES chapter. Any effects identified are not likely to have related health effects at a population or a sub-population level.
	Open Space, Leisure and Play	There is open space within and surrounding the site, including Eddington Cricket Field and playing fields. The Socio-Economic ES chapter will include an assessment of effects of the proposed open and play space provision, in the context of increases in demand from new residents, and will identify mitigation if necessary. Use of these spaces is likely to be beneficial at an individual level, the scale of provision is unlikely to have a significant health effect at the population or sub-population level.
	Transport Modes, Access and Connections	The design of the Proposed Development is being informed by a Transport Assessment which will include transport solutions for cars, public transport, cycling and walking for both interim phases and the final operational development. Active travel will be promoted through creating new connections across the site and prioritising pedestrian and cyclists. The Applicant will prepare and commit to a Travel Plan, establishing measures to encourage use of sustainable modes of transport. These measures are likely to have a beneficial effect on health of individuals, however this is unlikely to be significant at the population or sub-population level.
	Community Safety	An increase in the residential, visitor and employee population on the site will increase opportunities for crime but will also increase activation of the site at different times of the day through the mix of uses providing natural surveillance. The Proposed Development will be designed in line with secure by design principles to promote community safety. The net effects on population or sub-population health are not likely to be significant.
	Community Identity, Culture, Resilience and Influence	The planning and design process includes extensive community and stakeholder engagement to ensure community needs are met. This includes consideration of community development measures to ensure the new neighbourhood develops its own identity and culture, and sufficient resilience



Wider Determinants of Health		Consideration
		is built in through provision of social infrastructure and access to employment. These measures are likely to have a positive effect on health for individuals but are unlikely to be significant at the population or sub-population level.
	Social Participation, Interaction and Support	The Proposed Development will provide a mix of uses including flexible Use Class E floorspace, which may comprise retail, health and indoor sports uses. These facilities will provide space for social mixing, supporting community cohesion. As above, community development measures will be considered to ensure the new neighbourhood develops cohesively with appropriate support and social networks. Whilst these measures are important and likely to result in positive health effects, as well as reducing negative health effects for individuals, they are unlikely to have a significant effect on health at the population or sub-population level.
Economic Environment	Education and Training	The Socio-Economics ES chapter will include an assessment of demand for school places assessed against existing and projected future capacity in local schools, and any new proposed provision. Human health effects at the population level related to education are therefore unlikely to be significant.
	Employment and Income	The Proposed Development will provide up to 100,000m² Gross External Area (GEA) of flexible floorspace supporting a range of uses which will support employment as well as up to approximately 6,000m² GEA of flexible floorspace, which may comprise retail, nursery, health and indoor sports uses, the level of which will be assessed in the Socio-Economic ES chapter. New employment opportunities can support beneficial health outcomes for individuals and populations but the scale of non-residential floorspace proposed is unlikely to have a significant health effect at the population or sub-population level in this context.
Bio-Physical Environment	Climate Change and Adaption	The Proposed Development is being designed in line with latest requirements and guidance to minimise greenhouse gas emissions and include appropriate adaption to climate change. Design measures will be incorporated to minimise the risk of buildings overheating and to reduce the impact of extreme weather events e.g. use of SuDS to minimise flood risk. Effects on individuals are expected to be beneficial but given the scale and nature of the development it is unlikely to have a significant effect on health at a population or sub-population level.
	Air Quality	An Air Quality Assessment will be undertaken to inform the initial design of the Proposed Development and further mitigation/controls if required. This includes consideration of impacts in relation to pollutants such as nitrogen oxide (NO₂) and fine particulates (PM₁₀) which are known to have detrimental effects on human health above threshold levels as well as more generally on the environment. Measures will be identified as part of the technical assessment to reduce and/or minimise impacts if necessary. Based on the scale and nature of the Proposed Development, the impact to human health at the population level or sub-population level is not likely to be significant. However, this can be reviewed at the assessment stage. Should the ES identify that a significant adverse air quality effect is likely, then a Human Health chapter will be included within the EIA. This will be scoped to assess air quality effects specifically.
	Water quality or availability	During construction best practice measures will be implemented and enforced via a CEMP. An assessment of water resources will be undertaken as part of the EIA which will identify mitigation measures during construction and operation if necessary. Based on the scale and nature of the Proposed Development, the impact on human health at the population level or sub-population level is not likely to be significant. However, this can be reviewed at the assessment stage. Should the ES identify that a significant adverse water quality or availability effect is likely, then a Human Health chapter will be included within the EIA. This will be scoped to assess water effects specifically.
	Land quality	Detailed ground contamination studies will be undertaken, and any required remediation will be secured through an appropriately worded planning condition. Based on the scale and nature of the Proposed Development, the impact on human health at the population level or sub-population level is not likely to be significant. However, this can be reviewed at the assessment stage. Should the ES identify that a significant adverse land quality effect is likely, then a Human Health chapter will be included within the EIA. This will be scoped to assess land quality effects specifically.
	Noise and vibration	Noise and vibration will be managed during the enabling and construction works through best practice measures. These management measures will be informed by the detailed noise and vibration assessment being undertaken and will form part of the CEMP. The design of the Proposed Development will be informed by the noise and vibration assessment to ensure suitable noise levels are achieved for



Wider Determinants of Health		Consideration
Institutional and built environment		occupants in the context of existing surrounding uses, including an assessment of the impacts of the M11 on residents. Based on the scale and nature of development, the impact on human health at the population level or sub-population level is not likely to be significant. However, this can be reviewed at the assessment stage. Should the ES identify that a significant adverse noise effect is likely, then a Human Health chapter will be included within the EIA. This will be scoped to assess noise effects specifically.
	Radiation	No impacts from radiation are expected as a result of the Proposed Development.
	Health and social care services	The Socio-Economic ES chapter will include an assessment of demand for GP services and will propose mitigation if required.
	Built environment	The Proposed Development will deliver approximately 4,200 new residential units, 1,675 student accommodation units and up to 675 co-living units and non-residential uses, including flexible Use Class E space, alongside supporting open space in line with the allocation for the site. The buildings and public realm are being designed in accordance with latest standards, regulations and guidance to ensure they are high quality and accessible. This includes consideration to inclusive design principles. Development can provide opportunities for healthy choices/behaviours through the design of the built environment but cannot enforce resident/employee/visitor behaviour. Effects on individuals are expected to be beneficial but given the scale and nature of the development, it is unlikely to have a significant effect on health at a population or sub-population level with respect to the built environment.
	Wider societal infrastructure and resources	As set out above, the Proposed Development will provide a range of uses to support the new neighbourhood. The impact on essential local services is scoped into the Socio-Economic ES Chapter.

In addition, the following assessments within the EIA will consider aspects that could link to potential health effects arising from the Proposed Development:

- Traffic and Movement;
- Socio-Economics;
- Air Quality;
- Noise and Vibration;
- Ground Conditions and Land Contamination;
- Water Resources, Flood Risk and Drainage; and
- Climate Change and Greenhouse Gases.

Conclusion

The Proposed Development is not likely to result in significant effects on Human Health at a population or sub-population level. It is proposed to **SCOPE OUT** an assessment of the Proposed Development's effects on Human Health.

This position will be kept under ongoing review as technical assessments are completed as part of the EIA. In the unlikely event that relevant significant residual effects are identified within the EIA, a human health ES chapter will be prepared.

PROJECT VULNERABILITY

Introduction

It is considered that significant effects relating to project vulnerability (major accidents and disasters) are unlikely and as such this topic is **SCOPE OUT** of the EIA. The need for project vulnerability to be scoped into the EIA has been considered by Trium Environmental Consulting LLP, and the following provides a summary as to why no likely significant effects are expected.

With reference to Regulation 4(4) and Schedule 4 of the EIA Regulations 2017 (as amended) (the 'EIA Regulations'), this topic sheet considers whether there are likely to be any significant effects on the environment or the project arising from the vulnerability of the Proposed Development to major accidents or disasters.

Paragraph 8 of Schedule 4 of the EIA Regulations provides a description of the information to be provided in the ES in relation to these events. In line with this description, this information is of key importance for the assessment of major industrial and/or infrastructure schemes which could pose significant risks to society and the environment in the event of a major accident or a natural disaster which would impede its normal function (e.g. nuclear / petrochemical installations, major transport infrastructure such as tunnels, bridges or airports, etc.). While the Proposed Development does not fall into these scheme categories, the project's vulnerability to a major accident or a natural disaster has nevertheless been taken into consideration to ascertain the potential risks to future Site users and surrounding human and environmental receptors.

Discussion for Scoping Out

Available guidance (IEMA Major Accidents and Disasters in EIA: A Primer¹) has clarified the definitions of major accidents and disasters to the following:

- **Disaster** – “*may be a natural hazard (e.g., earthquake) or a man-made/external hazard (e.g., act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident*”; and
- **Major accident** as “*events that threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Whilst malicious intent is not accidental, the outcome (e.g., train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events*”.

As noted in the guidance, a development should first be screened to determine its potential to result in likely significant effects from major accidents and natural disasters. The following questions are posed to help determine a view on this:

“Is the development a source of hazard itself that could result in a major accident and/or disaster occurring?”

Does the development interact with any sources of external hazards that may make it vulnerable to a major accident and/or disaster?

If an external major accident and/or disaster occurred, would the existence of the development increase the risk of a significant effect to an environmental receptor occurring?”

¹ IEMA, 2020, Major Accidents and Disasters in EIA: A Primer.



In line with the above questions, given its intended scale and uses, it is considered the Proposed Development would be unlikely to result in significant effects from most major accidents and natural disasters. The Proposed Development is not a source of hazard itself nor does it interact with any sources of external hazards that make it vulnerable to a major accident or disaster.

The Proposed Development is a scheme that will provide residential, commercial and education land uses. As such, considering the above definitions and considerations, an assessment of the Proposed Development's vulnerability to major accidents and natural disasters has been screened out of further assessment in the EIA.

The guidance further states that:

"Not all potential events will fall into the scope of a major accidents and/or disasters assessment. The level of risk therefore needs to be defined to inform what types of events are within the scope of the major accidents and/or disasters assessment".

The Cambridge and Peterborough Local Resilience Forum (CPLRF) have developed a Community Risk Register (CRR)² which lists a range of natural hazards and man-made accidents/incidents and assess the risks they pose to the Cambridgeshire and Peterborough area based on their potential impact and likelihood of occurring. The Cambridgeshire County Council (CCC) which is part of the CPLRF have also developed the Cambridgeshire County Council Emergency Management Plan³. As well as assessing the risk of these events, the CRR also provides an outline of the control measures already in place to avoid, manage and respond to risks considered relevant to the Cambridgeshire and Peterborough area. These control measures range from specific laws and regulations intended to avoid or manage the potential causes of major accidents and natural disasters, to government agency programmes intended to prevent, inspect and monitor these causes, as well as a variety of response plans, forecasting and early warning systems. The effective implementation of these plans, programmes, legislative tools and guidance is considered to reduce the risk of these events to a level which is as low as reasonably possible.

Due to the nature and surroundings of the Proposed Development, many of the events listed in the Register (e.g. infectious disease and mass crowding etc.) are not considered relevant or likely to pose a risk to future site users or surrounding receptors. The remaining events in the Register will be managed, or altogether avoided, through the aforementioned established regulatory framework and the control measures implemented at the local and/or national government level, with the support of specialist government agencies.

In some cases, this risk management process will be further supported with project-specific information and assessments which form part of the EIA and the wider planning process. This includes the requirement for a Flood Risk Assessment to be provided with the planning application will address the flood related risks.

It should be noted that Project Vulnerability, Major Accidents and Natural Accidents will be considered throughout the ES as relevant, in particular with regards to the following topics:

- **Air Quality** which will assess the impact of the Proposed Development on Air Quality during both its construction and once operational;
- **Ground Conditions and Land Contamination** which will assess the potential risk to on-site and off-site users to existing and future sources of contamination (e.g. ingestion of contaminated soil, inhalations of hazardous gases or accumulation of explosive concentrations of ground gas); and
- **Water Resources, Flood Risk and Drainage** which will assesses the potential for flood risk to the Proposed Development, and the surrounding areas.

The Proposed Development detailed design (to be sought via future Reserved Matters Applications) will be subject to regulatory and legislative framework to ensure the safety of its users. Risk of fire is also managed outside of the EIA process is subject to its own regulatory control. These are, however, design matters and therefore not relevant to the EIA.

In addition, the planning application process also presents an opportunity for local authorities and government agencies/bodies to comment on the proposals and address any vulnerabilities (e.g., consultation with the police on security matters, including Secure by Design accreditation).

Conclusion

In line with the above, it is considered that the vulnerability of the Proposed Development to major accidents and natural disasters will be adequately managed throughout the lifetime of the project. As such, it is considered that the vulnerability of the Proposed Development to such events, is in itself, unlikely to result in any significant

² Cambridgeshire Fire and Rescue Service, Community Risk Management Plan (2024-2029), [Our Community Risk Management Plan \(cambsfire.gov.uk\)](https://www.cambsfire.gov.uk)

³ CCC, Emergency Management Plan (2023-2024), [Emergency Management Plan - 2023-24 \(cambridgeshire.gov.uk\)](https://www.cambridgeshire.gov.uk)



effects on introduced site users and surrounding environmental and human receptors. Therefore, it is proposed that the issue of major accidents and natural disasters is **SCOPED OUT** of the EIA.



WASTE AND MATERIALS

Introduction

It is considered significant effects relating to waste and materials are unlikely, and as such this topic is proposed to be **SCOPED OUT** to the EIA. The need for waste and materials to be scoped into the EIA has been considered by Trium Environmental Consulting LLP, and the following sections provide a summary of baseline conditions and clarifies why no likely significant effects are expected.

Materials

Baseline

Materials consumption within the wider UK, specifically with regards to the construction stage of works, is responsible for 60% of material use and waste generation. Humanity is on course to triple material extraction in the next 30 years, and triple waste production by 2100¹.

Enabling, Demolition and Construction

During enabling, demolition and construction, it is anticipated that materials for constructing the Proposed Development will be sourced from:

- The site, in terms of any 'waste for recovery'²;
- Within the South Cambridgeshire District Council (SCDC) and Cambridge City Council (CCC) areas, as much as is practicable;
- Nationally and in some instances, internationally.

In accordance with IEMA's guide to Materials and Waste in Environmental Impact Assessment³, materials are considered to be sensitive receptors and include *"physical resources that are used across the lifecycle of a development. Examples include concrete, aggregate, asphalt, bricks, ballast, mortar, glass and timber."*⁴

Mitigation

IEMA's Guide to Materials and Waste in Environmental Impact Assessment refers to different types of mitigation measures to prevent or reduce adverse effects relating to materials and waste:

- Primary mitigation measures: are *"an intrinsic part of the development, and do not require additional action to be taken"*⁵; for example, choosing to refurbish an existing building, rather than demolish it;
- Secondary mitigation measures: are *"foreseeable actions brought out by the environmental assessment process, and that have not previously been achieved through primary and tertiary mechanisms"*⁶; for example, the implementation of a Procurements Strategy or Construction Environmental Management Plan (CEMP) or Operational Waste Management Strategy; and
- Tertiary mitigation measures: are *"those that are in place with or without the iterative EIA process"* and include *"those that will be undertaken to meet existing legislative requirements, of those that are considered*

standard practices used to manage commonly occurring environmental effects"⁷; for example, sending waste to active and permitted waste management sites, which have to adhere to the requirements of the Environmental Permitting Regulations⁸, whereby carrying out certain types of activity (such as receiving waste for landfill) requires an active and permitted waste management site to hold an environmental permit to do so.

In view of the above, measures will be implemented to reduce the quantity of materials used during the construction of the Proposed Development. The key construction materials will be:

- Sourced locally as far as reasonably practicable;
- Sourced in accordance with The Green Guide to Specification⁹ where feasible, to reduce the environmental impact of the construction of the Proposed Development by an informed and responsible selection of construction materials and components (for example, for the floors, roofs, walls, windows, insulation and landscaping of the Proposed Development);
- Reclaimed or recycled materials, where feasible;
- Sourced via a defined Procurement Strategy (expected to be conditioned if the planning application is granted), which will select materials with a percentage of recyclable content where feasible; and
- Managed via the implementation of a CEMP (Outline CEMP to be submitted with the planning application), which will include measures such as:
 - A 'just-in-time' material delivery system to avoid materials being stockpiled and spoiled during bad weather;
 - Consideration of material quantity requirement to avoid over-ordering and generation of waste materials; and
 - Designated storage area for new building materials, to reduce the risk of damage / spoiling.

Measures such as the above shall be implemented pursuant to planning conditions; therefore, it is considered that significant adverse effects of the enabling, demolition and construction of the Proposed Development on materials would be unlikely.

On the basis of the above, it is proposed to scope out an assessment of demolition and construction effects on materials; however, the ES will set out:

- The approximate type and quantities / volumes of materials that are anticipated to be required for the construction of the Proposed Development;
- The sustainability credentials of materials (if known); and
- The commitment to undertaking the measures outlined in the mitigation section above.

Completed Development

The materials anticipated to be required during the operation of the Proposed Development are expected to be primarily used for maintenance purposes. Given that:

- The quantities of materials to be used would be far less than that used during construction of the Proposed Development; and
- The scale and massing of the Proposed Development (and so the expected maintenance required) would be typical for a residential, commercial retail and food and beverage floorspace, it is considered that significant adverse effects on materials due to the ongoing operation/use of the Proposed Development would be unlikely.

On the basis of the above, it is proposed to **scope out** an assessment of operational effects on materials.

¹ UKGBC, 2020, Circular Economy, <https://www.ukgbc.org/ukgbc-work/circular-economy/>

² Defined by IEMA's guide to Materials and Waste in Environmental Impact Assessment (2020) as 'waste' materials that go through an acceptable recovery process, to lose their status as 'waste' and become materials for other uses.

³ IEMA, (2020). IEMA guide to: Materials and Waste in Environmental Impact Assessment.

⁴ IEMA, (2020). IEMA guide to: Materials and Waste in Environmental Impact Assessment (page 13).

⁵ IEMA, (2020); IEMA guide to: Materials and Waste in Environmental Impact Assessment (page 19).

⁶ IEMA, (2020); IEMA guide to: Materials and Waste in Environmental Impact Assessment (page 27).

⁷ IEMA, (2020); IEMA guide to: Materials and Waste in Environmental Impact Assessment (page 20).

⁸ The Environmental Permitting (England and Wales) Regulations 2016

⁹ BRE, (2009); The Green Guide to Specification, Fourth Edition.



Waste

Baseline Waste Context

The site is located across the administrative boundary of South Cambridgeshire District Council (SCDC) and Cambridge City Council (CCC). Both SCDC and CCC are part of the Cambridgeshire County Council. The Cambridgeshire County Council and Peterborough City Council are the Waste Planning Authorities (WPAs) for the administrative areas of Cambridgeshire and Peterborough City respectively. These WPAs adopted the Cambridgeshire and Peterborough Minerals and Waste Local Plan (CPMWLP)¹⁰ on 28 July 2021 which provides guidance for the sustainable waste management across the plan area of Cambridgeshire and Peterborough for the plan period until 2036.

As part of its sustainable waste management objective, the CPMWLP includes the management of waste arisings within the plan area for the plan period along with ensuring the implementation of appropriate waste management practices by all major new developments in the plan area.

The total waste arisings estimated in 2017 for the plan area totalled approximately 2.782 million tonnes per annum (Mtpa), which includes municipal (15%), commercial and industrial (C&I) (24%), construction, demolition and excavation (CD&E) (59%) and hazardous waste (2%). By 2036, the waste arisings from the plan area are forecasted to amount to 3.163Mtpa. Additionally, WPA areas also export waste to the plan area. It was noted that the plan area was a net importer of waste as of 2017, however as directed in national policy, with the WPAs expected to become more self-sufficient in managing their waste in the future, the plan area is expected to see a considerable reduction in the amount of imported waste in the future.

Table 1 indicates the forecasted waste arisings for all waste streams noted above, up to the end of the plan period in 2036 against the waste arisings logged in 2017.

Table 1 Cambridgeshire and Peterborough – Forecasted Waste Arisings (Mtpa)¹¹

	Waste Arisings 2017	Forecast Waste Arisings 2021	Forecast Waste Arisings 2026	Forecast Waste Arisings 2031	Forecast Waste Arisings 2036
Cambridgeshire	2.224	2.187	2.270	2.339	2.412
Peterborough	0.558	0.688	0.712	0.732	0.751
Total	2.782	2.875	2.982	3.071	3.163

The Waste Needs Assessment (WNA) undertaken in November 2019 during the production of the CPMWLP has however factored in the importing of non-apportioned household and C&I waste from London into the plan area while calculating the capacity gap for each waste stream. Overall, WNA 2019 concluded that the plan area has sufficient capacity to meet the forecasted waste arisings and any capacity gaps will be met by the permitted waste management facilities which will likely be operational in the initial years of the plan period.

Enabling, Demolition and Construction

During enabling, demolition and construction, it is anticipated that any waste for recovery or waste for disposal generated from the site would be directed to active and permitted waste management sites within the Cambridgeshire and Peterborough plan area.

In accordance with IEMA's Guide to Materials and Waste in Environmental Impact Assessment, landfill capacity is considered to be a sensitive receptor. The types of waste (whether this be waste for recovery or waste for disposal) which may be generated by the demolition and construction of the Proposed Development includes:

- Concrete;
- Brick;
- Glass;
- Slate;
- Plastic and packaging;
- Mixed metals;
- Gypsum;

¹⁰ Cambridgeshire County Council, 2021. Cambridgeshire and Peterborough Minerals and Waste Local Plan. Available at <https://www.cambridgeshire.gov.uk/business/planning-and-development/planning-policy/adopted-minerals-and-waste-plan>

¹¹ Peterborough City Council, Waste Needs Assessment- Proposed Submission Document, November 2019. Available at: [PCC Planning Policy Public Data - Primary Evidence - All Documents \(sharepoint.com\)](#)



- Mixed demolition and construction waste;
- Canteen waste (e.g. foil, cardboard, plastic packaging, food waste etc.);
- Card and paper; and
- Hazardous waste (e.g. oils, paints, adhesives, asbestos etc.).

Mitigation

As noted in the 'Materials' section of this Topic Sheet, different types of mitigation measures are available.

In view of the measures available, an Outline CEMP will be prepared and submitted with the planning application, and will be secured and implemented throughout the demolition and construction works pursuant to a planning condition/s. The CEMP may be supported by a Site Waste Management Plan (SWMP) which would also be prepared and implemented throughout the demolition and construction works pursuant to a planning condition/s. Together, the measures defined within the CEMP and SWMP will minimise waste arising from construction materials; example management measures include but are not limited to: avoiding the stockpiling of construction materials; preventing the overordering of construction materials by carrying out upfront cost analysis works; and storing the construction materials in an appropriate location that will minimise damage to materials.

Further to the above, additional mitigation measures that will be implemented include, but are not limited to, the following:

- The Applicant is committed to re-using a specific amount of enabling, demolition and construction waste (for recovery) on-site, the numbers of which would be set out in the ES. Additionally, the approximate quantities of waste anticipated to be generated by the demolition and construction of the Proposed Development will be set out in the ES;
- Should hazardous or contaminated materials be identified, works in the area will temporarily stop, and the materials will be removed and disposed of in line with relevant legislation and guidance e.g. The Control of Asbestos at Work Regulation 2012 and Control of Substances Hazardous to Health Regulations (COSHH) 2002;
- The setting of waste reduction targets and waste re-use / recycling targets prior to commencing works on-site and monitoring of such targets throughout the duration of the demolition and construction works; and
- The implementation of waste segregation measures where space is available onsite, whereby segregating the key / main waste streams, waste for recovery can be identified prior to leaving the site.

Based on the CPMWLP identifying that the plan area will have sufficient capacity to manage waste arisings up until 2036 and that the enforcement of and adherence to mitigation measures that would be implemented pursuant to planning conditions from the submitted planning application in relation to the Proposed Development, any additional waste generated from the enabling, demolition and construction of the Proposed Development will be unlikely to cause strain on the areas' waste management facilities. Therefore, significant adverse effects on the local waste management infrastructure and landfill capacity, resulting from the waste expected to be generated during the demolition and construction of the Proposed Development, are considered unlikely.

On the basis of the above, it is proposed to scope out an assessment of the Proposed Development's demolition and construction effects on waste / landfill capacity; however, the ES will set out:

- The approximate type and quantities / volumes of demolition and construction waste that are expected to be generated by the development;
- The percentage or volumetric target for re-use of demolition and construction waste (for recovery) on-site (if known); and
- An outline of relevant waste measures to be included within the Outline CEMP and / or SWMP (or equivalent).

Completed Development

During the operation of the Proposed Development, it is anticipated that any waste for recovery or waste for disposal generated from the site would be directed to active and permitted waste management sites within the Cambridgeshire and Peterborough plan area.

The key waste materials which may be generated by the operational Proposed Development include:

- Organic / compostable waste;



- Dry mixed recyclables;
- Paper and cardboard;
- Packaging wastes;
- Waste electrical and electronic equipment (WEEE) wastes;
- Bulky waste; and
- Residual waste.

Mitigation

The design of the Proposed Development will ensure there is sufficient storage and equipment / provisions in place to manage and direct the operational waste, expected to be generated by the Proposed Development, to the relevant storage areas provided. The design of the Proposed Development will also ensure there is sufficient space for the collection of waste to be relocated to the relevant active and permitted waste management sites.

A Delivery and Servicing Management Plan will be prepared for the Proposed Development, in order to manage the impact of delivery and servicing goods and reduce the impacts to the local transport network.

Detailed information on the type and quantities / volumes of waste streams anticipated to be generated by the operational Proposed Development, along with how each waste stream will be managed will be set out within an Outline Waste Management Strategy (OWMS). The OWMS will also provide details on how waste will be reduced, minimised and recycled, where possible, in line with the Waste Hierarchy and the WPA's requirements. The OWMS will be submitted with the planning application.

Considering the available capacity specified within the CPMWLP for waste to accommodate the apportionment targets, the available landfill void capacity and the adherence to mitigation measures pursuant to planning conditions, waste generated from the Proposed Development is not anticipated to cause strain to the area's waste management facilities once operational. Therefore, significant adverse effects on the local waste management infrastructure and landfill capacity, resulting from the waste expected to be generated during the operation of the Proposed Development, are considered unlikely.

On the basis of the above, it is proposed to scope out an assessment of the Proposed Development's operational effects on waste / landfill capacity, however, the ES will set out:

- The approximate type and quantities / volumes of operational waste that are expected to be generated by the operational Proposed Development within **ES Volume 1, Chapter 4: The Proposed Development**; and
- The above mitigation measures will be summarised within **ES Volume 1, Chapter 17: Environmental Management, Mitigation and Monitoring Schedule**.

Conclusion

As such, it is considered that the Proposed Development is not likely to result in significant effects on Waste and Materials. Based on the above, it is proposed to **SCOPE OUT** an assessment of the Proposed Development's effects on Waste and Materials.

WIND MICROCLIMATE

It is considered significant effects relating to wind microclimate are unlikely, and as such this topic is proposed to be **SCOPE OUT** to the EIA. The potential need for wind microclimate to be scoped into the EIA has been considered by Trium Environmental Consulting LLP, and the following provides a summary of baseline conditions and clarifies why no likely significant effects are expected.

Baseline Conditions

Current Baseline Conditions

The site currently comprises grassland fields, existing residential properties, playing fields, a Sainsbury's Supermarket, Eddington Cricket Field, cleared construction sites, and also incorporates sections of Huntingdon Road (A1307) and Madingley Road (A1303). Agricultural buildings associated with Howe Farm are located within the north-western extent of the site, along Huntingdon Road.

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.

In the east of England, prevailing winds come from the south to west quadrant, with the maximum winds from the south-west. Windy conditions can be expected in areas densely populated by tall buildings. Wind assessments are necessary for buildings that extrude above their surroundings by a significant amount.

The potential for likely significant effects in relation to wind microclimate is typically assessed in respect of the Lawson Comfort Criteria to determine the differing level of impact on assessed locations. The generation of significant wind microclimate effects is typically associated with taller developments in urbanised environments.

Discussion for Scoping Out

Enabling, Demolition and Construction

Throughout the enabling, demolition and construction phase of the Proposed Development, the use of construction equipment and the erection of new structures may affect the local wind microclimate. However, given the scale of the Proposed Development, and in turn the scale of the equipment used, these effects are unlikely to generate any pedestrian comfort or safety exceedances due to wind microclimate conditions on-site.

Any effects resulting from enabling, demolition and construction activity will be temporary in nature and are transitory. In addition, wind conditions for pedestrian amenity use are not expected or required on a construction site, where the public will not be allowed access. As such, it is considered unlikely that significant effects relating to wind microclimate during demolition and construction would occur.

Completed Development

The Proposed Development redevelops the current site with buildings which will generally range between 2 and 6 storeys (with some flexibility for the location of higher building elements where appropriate). Given the



low-rise nature of the Proposed Development, it is considered unlikely that the Proposed Development will generate any pedestrian comfort or safety exceedances due to an alteration of on-site wind conditions. For this reason, significant on-site wind microclimate effects are considered unlikely, once the Proposed Development is complete and operational. Furthermore, off-site wind conditions are unlikely to change, and therefore off-site pedestrian comfort or exceedances are considered unlikely.

Conclusion

It is considered that the Proposed Development is unlikely to give rise to significant residual effects with respect to wind microclimate during demolition and construction activities, as well as once operation. It is therefore proposed that wind microclimate is **SCOPED OUT** of the EIA.

Given the above, no technical assessment of wind microclimate is considered necessary in respect of the Proposed Development.

ANNEX F: ECOLOGY CONSULTATION



Eddington EIA – Scope of Ecology Surveys

Notes from meeting held on 8th July 2024, 3pm, at Storey’s Field Centre

Attendees:

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Proposed baseline for EIA and BNG

It is understood by the University of Cambridge’s team that the baseline for BNG will be based on the current situation; previous discussions had been based on the option for using a pre-Phase 1 baseline for BNG.

Proposed scope of surveys

The list of proposed ecology surveys circulated before the meeting was discussed, with a focus on the following items:

Bat survey

GB recommended that the surveys should initially follow the BCT guidelines based on a site of moderate habitat suitability, using both transects and automated detectors, with this reviewed at the end of the 2024 season dependent on results. It was agreed that data could be collected during the latter part of the 2024 season (likely to commence in August 2024) and be completed in the 2025 season (to be completed by July 2025).

GB also noted the presence of barbastelle bats on site, mostly likely associated with Madingley Wood. This species is now frequently recorded across the city of Cambridge. It is anticipated that the need for Habitat Regulations Assessment (HRA) in relation to Eversden and Wimpole Woods SAC can be screened out. GB referred to the Greater Cambridge Shared Planning Authority’s Biodiversity Supplementary Planning Document (Biodiversity Issue B9).

Post-meeting note: GB and MD discussed the issue of screening out HRA during a phone call on 12th July 2024; GB suggested that UoC could write to GB and GW to address this issue specifically, separately and in advance of EIA scoping.

Badger bait-marking survey

It was agreed that this would not be required for the planning application.



Brown hare survey

It was agreed that this would not be required for the planning application.

Reptile survey

It was agreed that a sampling approach should be taken.

Harvest mouse survey

GB suggested seeking desk study records of harvest mice from Cambridgeshire Mammal Group and then consider whether a sampling approach should be taken.

Watercourse assessment for BNG

This will be required if the development involves land use change within 10m of the Washpit Brook. DS to confirm with engineering team.

Additional LPA requirements

An update of the existing Biodiversity Strategy is not required, given that much of what is covered in terms of biodiversity enhancements will now be dealt with through BNG. A BNG plan will be required. Other ecological enhancements, such as provision of bird and bat boxes, should be covered in a separate document, such as an Ecological Enhancement Plan.

Our ref: Q230959
Email: [REDACTED]
Date: 18 July 2024



[REDACTED]
Biodiversity Officer
Cambridge City Council
4 Regent Street
Cambridge
CB2 1BY

For the attention of [REDACTED]

Dear [REDACTED],

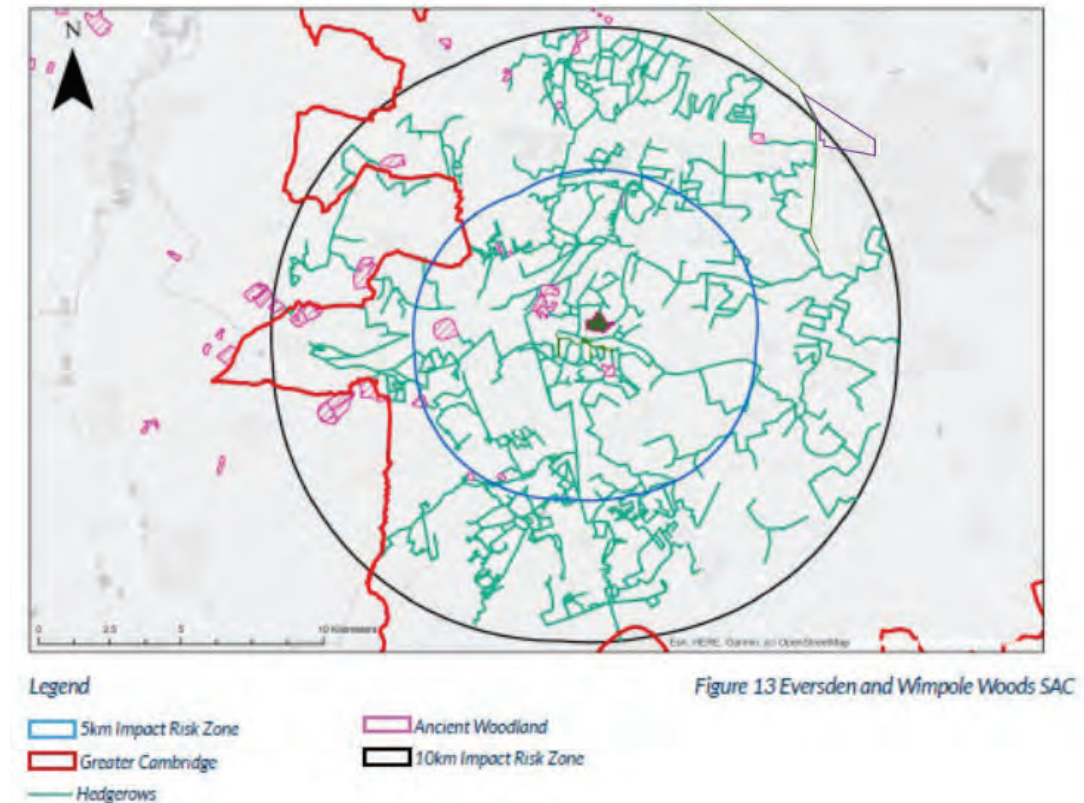
NORTH WEST CAMBRIDGE DEVELOPMENT – HABITAT REGULATIONS ASSESSMENT SCREENING

This letter has been prepared to request a screening assessment from Greater Cambridge Shared Planning (“GCSP”), as stage one of the Habitat Regulations Assessment (“HRA”) process, for the North West Cambridge development in relation to the Eversden and Wimpole Woods Special Area of Conservation (“SAC”). This issue was discussed at a meeting on 8th July 2024 attended by Guy Belcher and Guy Wilson from GCSP and members of the North West Cambridge project team. Relevant background information has been provided below, taken from:

- GCSP’s Biodiversity Supplementary Planning Document (2022)
- HRA screening in relation to the impacts of the Draft Plan (2014) on the Eversden and Wimpole Woods SAC
- HRA Report for the Greater Cambridge Local Plan: First Proposals (2021)

Paragraph 5.6.17 of the GCSP Biodiversity SPD (2022) states that “All development within 5 km of the Special Area of Conservation designated site is considered by Natural England as a key conservation area with a 10 km sustenance or wider conservation area. Please note that at time of writing, Natural England are reviewing the IRZ distances for this site, possibly extending out to 20km.”

Paragraph 5.6.18 states that “The Eversden and Wimpole Woods Special Area of Conservation map below shows the relative Impact Risk Zones and indicative functionally linked habitat (please note this is for illustrative purposes only, so some hedgerows, and smaller woods are not shown).” Although a small part of the North West Cambridge site is located 9.5km from the SAC (and therefore just within the 10km zone), none of the habitats within the site, nor those to which it is directly connected given the presence of the M11 motorway and Cambridge City Centre, are identified on the map as functionally linked habitat.



Reproduced from Greater Cambridge Shared Planning Biodiversity SPD with addition of:

- Approximate location of Eddington site
- Approximate location of A14/M11

As part of the evidence base of the Cambridge Local Plan (2018), the local planning authority undertook HRA screening in relation to the impacts of the Draft Plan (2014) on the Eversden and Wimpole Woods Special Area of Conservation. See <https://www.cambridge.gov.uk/media/1790/appropriate-assessment-part-2-final.pdf>

This concluded (Appendix 4, page 85) that, “With regards to the Eversden and Wimpole Woods SAC, it is considered that the Cambridge Local Plan 2014 is unlikely to have a significant impact on the conservation objectives of this site. With regards to the possible impacts resulting from policies and allocations contained within the adopted Cambridgeshire and Peterborough Minerals and Waste LDF, no adverse effects were identified as all pathways were either absent or too long when examined.”



The following specific impacts were considered as part of this HRA screening process (Appendix 4, pages 80 – 85):

a. Land take by development

This impact is not relevant to the Cambridge Local Plan, nor to the North West Cambridge project.

b. Impact on protected species outside the protected sites

The assessment makes reference to the fact that barbastelle bats “can forage up to 20km from their roost sites, although this distance is more typically around 6-8km. Barbastelle bats require minimal disturbance within 2km of their roost. The main area of importance for these bats has been identified in the South Cambridgeshire Biodiversity SPD as shown on Map 1 of this document and identified in their Sustainability Scoping Report.”

The assessment goes on to state that “The closest major developments to these woods are on the fringes of Cambridge (the Southern Fringe Area Development Framework 2006 and North West of Cambridge Area Action Plan 2008). An Area Action Plan has been adopted for the Southern Fringe (by South Cambridgeshire District Council) and an Area Action Plan has been produced for the North West Cambridge site. Both of these sites are over 8km from the woods and are outside the area of importance.”

c. Recreational pressure and disturbance

The assessment concluded that “there will be no significant impact from increased recreational pressure and disturbance on the Eversden and Wimpole Woods SAC as a result of the Cambridge Local Plan 2014 alone or in combination with other plans.” This conclusion was based on the form and character of the woods and their relative distance from car parking and public transport links, as well as new developments providing their own strategic open space.

d. Changes in pollution levels

In relation to this, the assessment concluded that “As the development sites within Cambridge City will be some distance away from the Eversden & Wimpole Woods, it is considered that the Cambridge Local Plan 2014 in combination with plans for development in Cambridge City will not have an impact on these woods.”

The GCSP Service are in the process of preparing the Greater Cambridge Local Plan. Consultation on Preferred Options took place in 2021 and the North West Cambridge site is identified under Policy S/NWC: ‘North West Cambridge’. As part of the evidence base of the Greater Cambridge Local Plan, an HRA Report (2021) has been produced.

The 2021 HRA report concluded (p120) in relation to the Eversden and Wimpole Woods SAC that the Local Plan would have:

- No adverse impact on the SAC through physical damage and loss (of functionally linked land that is off-site), provided that certain mitigation measures are implemented

In terms of mitigation measures, bat surveys are required for site allocations identified with moderate or high potential to support barbastelle to determine the ecological value of these sites in relation to this bat species and to inform specific mitigation proposals. As set out on p78 of the HRA Report, North West Cambridge was assessed as having low suitability for this species.

- No adverse impact on the SAC through non-physical disturbance, provided that certain mitigation measures are implemented

North West Cambridge is not listed as one of the site allocations situated within or adjacent to suitable habitat which is functionally connected to the SAC for barbastelle bats (p104).

- No significant effects through air pollution, recreation or water quality and quantity – these were all screened out.

We look forward to hearing from you, if you have any further queries please do not hesitate to contact me.

Regards



Director



Enquiries to:

Biodiversity Officer, City Services

T: [REDACTED]
E: [REDACTED]



ANNEX G: LANDSCAPE AND VISUAL BASELINE REPORT

[REDACTED]
Quod
21 Soho Square
London
W1D 3QP

07 October 2024

Your reference: Q230959

Dear [REDACTED]

**North West Cambridge Development – Habitat Regulation Assessment
Screening in relation to Eversden and Wimpole Woods Special Area of
Conservation.**

In response to your letter dated 19th July 2024.

The Northwest Site allocation is within 500m of the identified 10km potential Impact Risk Zone for barbastelle bats. However, the M11 is considered a severance of any functional habitat links between the site and the SAC and therefore it is not considered proportionate to require a HRA for the NWC revised masterplan.

This position is supported through the 2018 Local Plan HRA, which identified no impacts on the Eversden and Wimpole Woods Special Area of Conservation. It is considered no significant habitat changes have occurred since this assessment to warrant a change in this position.

As previously agreed, a suite of bat activity surveys will be required to determine impacts on local bat population in line with local policy and the Greater Cambridge Biodiversity SPD.

Yours sincerely

[REDACTED]

[REDACTED]
Biodiversity Officer



LANDSCAPE AND
VISUAL BASELINE
NORTH WEST CAMBRIDGE

Quality Assurance

Site name: North West Cambridge

Client name: Grant Associates

Type of report: Landscape & Visual Baseline

Date:	Status:	Prepared by:	Reviewed by:
August 2024	Issued	Caroline Rust BSc LaGD MALA CMLI Martina Sechi BSc Be MALA CMLI	Martina Sechi BSc Be MALA CMLI
September 2024	Rev A	Caroline Rust BSc LaGD MALA CMLI Martina Sechi BSc Be MALA CMLI	Martina Sechi BSc Be MALA CMLI
October 2024	Rev B	Caroline Rust BSc LaGD MALA CMLI Martina Sechi BSc Be MALA CMLI	Martina Sechi BSc Be MALA CMLI



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1.0 Introduction

1.1.1	This Landscape and Visual Baseline (LVB) has been prepared on behalf of Grant Associates to assess the potential effects of the proposed development in North West Cambridge (hereafter referred to as the 'Site'), see Map 01 in Appendix 2.
1.1.2	This document aims to set out the landscape and visual baseline that will be considered in further assessment work and the methodology to complete a Landscape and Visual Impact Assessment (LVIA). Finally, a list of the landscape and visual receptors that are likely to be affected by the proposal is presented.
1.2	The Site
1.2.1	The Site covers an area of approximately 131.5ha (Figure 1) and it is allocated within Cambridge's Development Plan. It forms part of the development area known as the wider North West Cambridge Development Masterplan and it is located between the M11, A14, Huntingdon Road and Madingley Road.
1.2.2	The Site forms part of the wider North West Cambridge Development Masterplan redevelopment, which received outline planning permission in 2013. Phase 1 of the North West Cambridge Masterplan has been built out. The Site forms the remainder of the site which has not been developed.
1.2.3	The Site is approximately triangular in shape and currently comprises disused agricultural fields, existing residential properties, playing fields, a Sainsbury's Supermarket, Eddington Cricket Field, cleared construction sites, a currently decommissioned storm water recycling system, and also incorporates sections of Huntingdon Road (to the north) and Madingley Road (to the south). In addition, the Site comprises multiple areas of hard standing, including an area utilised for parking to the south of the site.
1.2.4	Washpit Brook passes across the Site, from the north-east to the south-west. Traveller's Rest Pit Site of Special Scientific Interest (SSSI) is located within the eastern extent of the site.
1.2.5	Vehicular access to the site can be gained via either Huntingdon Road to the north or Madingley Road to the south to the east of the site. Huntington 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. Pedestrian and cycle access can also be gained via Horse Chestnut Avenue and Bunkers Hills (from Huntingdon Road), as well as Storeys Way to the east of the site. 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.
1.2.6	There is approximately 41.9ha of land, across multiple land parcels, which is surrounded by the site but are not located within the planning application boundary (as shown in Figure 1 and Figure 2). These parcels of land comprise: • Residential properties; • University of Cambridge Primary School; • Hyatt Centric and Turing Lock Hotels; and • United Nations Environment World Conservation Monitoring Centre.

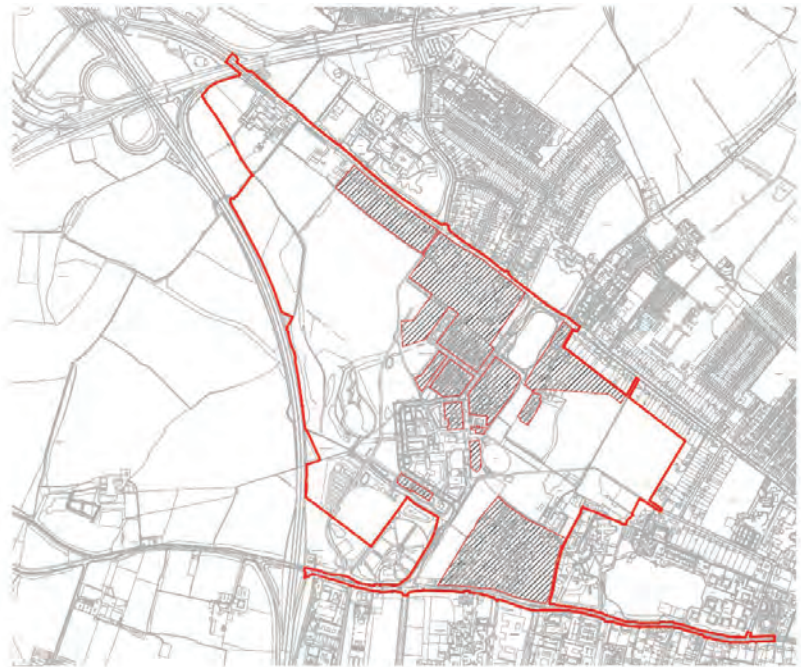


Figure 1 - Draft planning application red line boundary



Figure 2 - OPP 2013 Illustrative Masterplan, Phase 1 plots

2.0 Appraisal Approach

2.1 Methodology

- 2.1.1 The LVIA will form part of the Environmental Statement (ES) and therefore it accords with the relevant best practice guidance, namely:
- ‘Guidelines for Landscape and Visual Impact Assessment’, (GLVIA3) produced by the Landscape Institute with the Institute of Environmental Management and Assessment (Third Edition, 2013);
 - ‘Visual Representation of Development Proposals’. Technical Guidance Note 06/19, by the Landscape Institute (17 September 2019); and
 - ‘An Approach to Landscape Character Assessment’ by Natural England (October 2014).

- 2.1.2 The LVIA considers two separate but inter-linked issues:
- Landscape Effects relate to changes in the fabric, character and quality of the landscape. These include direct impacts such as loss of vegetation, or less perceptible effects such as changes to tranquillity. Landscape effects do not need to be visible.
- Visual Effects relate to specific changes in views and the effects on visual receptors (e.g. users of public rights of way or recreational facilities). Changes to the visual setting of protected cultural heritage features are also considered (e.g. Scheduled Monuments, Listed Buildings and Conservation Areas).

- 2.1.3 The landscape and visual assessment methodologies and scoring criteria are provided in Appendix 1. Generally, landscape or visual effects are considered significant if:
- They result in a major loss of or irreversible negative effect over an extensive area, and/or a valuable feature, and/or a sensitive receptor; and
 - The quality of change is of such scale and nature to cause a major and unacceptable mutation of the distinctive characteristics and value of the receptor (i.e. a non-characteristic, discordant or intrusive element).

2.2 Study Area

- 2.2.1 The Site is already an allocated site under the Development Plan and Phase 1 of North West Cambridge has already been completed; therefore change in the local character is expected and inevitable. This will influence the relationship of Cambridge’s urban area with the adjacent countryside and Green Belt (See Map 04 in Appendix 2).
- 2.2.2 The LVIA submitted for the wider North West Cambridge Masterplan (see 2012 ES) considered a study area of 2.5km, which encompass the range of distant views where the Site is visible from (see AECOM visual study in Appendix 4). Therefore, for consistency, a 2.5km study area radius will also be considered for this development.

2.3 Desk-Based Study

- 2.3.1 A desk-study is undertaken to identify planning policy and designations relevant to the assessment of landscape and visual effects. This includes:
- Ordnance Survey 1:10,000 scale Application Site-centred digital raster maps;
 - National Planning Policy Framework (December 2023);
 - South Cambridgeshire Local Plan (September 2018);
 - Cambridge City Local Plan (October 2018);

- District Design Guide (March 2010);
- North West Cambridge Area Action Plan (October 2009);
- National Character Area Profile 88 Bedfordshire and Cambridgeshire Claylands;
- Greater Cambridgeshire Shared Partnership, Greater Cambridge Landscape Character Assessment, Chris Blandford (2021);
- Cambridge Inner Green Belt Study, LDA (2015);
- The Multi-Agency Geographical Information for the Countryside (MAGIC) database; and
- Aerial photography: Google Maps (<http://maps.google.co.uk/>).

2.4 Field Study

- 2.4.1 A field survey was undertaken in August 2024 to assess:
- The Site's context characteristics;
 - Views of the Site from the surrounding areas;
 - The location of visual receptors; and
 - The potential visual effects arising from the proposed development.
- 2.4.2 The survey was generally undertaken from publicly accessible locations such as roads, bridleways, tracks, footpaths and public open spaces. Seventeen representative viewpoints were identified for the potentially affected receptors.

2.5 Consultations

- 2.5.1 This LVB will be submitted as part of the Environmental Impact Assessment (EIA) scoping. Any comment arising from this process will be considered and included appropriately in the final LVIA chapter of the Environmental Statement.

1.0 The Proposed Development

2.6 The Proposal

- 2.6.1 The Proposed Development is not currently fixed and it is expected to evolve further through the iterative design process that will culminate with a final proposal. In accordance with the EIA scoping report the Proposed Development is likely to comprise:
- Up to 4,200 new residential units (Use Class C3);
 - Up to approximately 1,675 student accommodation units (Sui Generis);
 - Up to approximately 675 co-living units (Sui Generis);
 - Up to approximately 6,500m² Gross Internal Area (GIA) of Senior Living (Use Class C2)
 - Up to 100,000m² Gross External Area (GEA) of flexible employment generating floorspace (Use Class E(g)(i) / E(g)(ii) / Sui Generis);
 - Up to approximately 6,000m² GEA of flexible floorspace, likely to comprise retail, nursery, health and indoor sports uses (Use Class E(a) – E(f));
 - Up to 45ha of public open space, including children play space, sports pitches, allotments and a sustainable urban drainage network;
 - Hard and soft landscaping features; and
 - Ancillary uses and plant.
- 2.6.2 Buildings will generally range between 2 and 6storeys (7m and 25m in height above ground level), with some flexibility for the location of higher building elemtns where appropriate, with a townscape focus. Basements are proposed as part of the Proposed Development.
- 2.6.3 The Proposed Development will deliver additional pedestrian and cyclist access throughout the Site.
- 2.6.4 The Applicant intends to submit an outline planning application with all matters reserved except for primary access to deliver a comprehensive redevelopment of the site.
- 2.6.5 All matters relating to 'Scale', 'Layout', 'Appearance', 'Access' and 'Landscaping' will be reserved and as such will be subject to outline design parameters that will be sought for outline approval, with the detailed design of these 'matters' to come forward for approval by GCSP later via the submission and determination of future RMAs.

3.0 Landscape Planning Context

3.1	National Planning Policy Framework
3.1.1	The National Planning Policy Framework (NPPF) sets out the overall economic, social and environmental objectives that the planning system should follow to achieve sustainable development. At the heart of the NPPF is a <i>'presumption in favour of sustainable development'</i> (Par. 10). More specifically, the NPPF policies relevant to the Site and proposed development are detailed below.
3.1.2	The framework stresses the importance of high quality design. It states that efficient use of land should take into account <i>'the importance of securing well-designed, attractive and healthy spaces'</i> (Par. 128e). Par. 131 adds that <i>'good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities.'</i> Developments should meet the following requirements (Par. 135): – <i>'a) will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;</i> – <i>b) are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;</i> – <i>c) are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities);</i> – <i>d) establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit;</i> – <i>e) optimise the potential of the site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) and support local facilities and transport networks; and</i> – <i>f) create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users; and where crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesion and resilience.'</i>
3.1.3	In defining the planning system obligations and scopes, the framework highlights the importance of protecting and enhancing the natural environment and features, this includes trees in an urban setting (Par. 136): <i>'Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible.'</i>
3.1.4	On a larger landscape scale, it focuses on <i>'protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan)</i> (Par. 174a). The countryside has a particular value on its own for its intrinsic character and beauty.
3.1.5	It is noted that the NPPF doesn't clearly define what constitutes a "valued landscape". Useful since the NPPF 2018 revision is the introduction of footnote 7 in Par. 11 which provides some additional guidance. This defines, more thoroughly than before, 'areas or assets of particular importance' as: 'habitats sites (and those sites listed in paragraph 176) and/or designated as Sites of Special Scientific Interest; land designated as Green Belt, Local Green Space, an Area of Outstanding Natural Beauty, a National Park (or

	within the Broads Authority) or defined as Heritage Coast; irreplaceable habitats; designated heritage assets (and other heritage assets of archaeological interest referred to in footnote 63); and areas at risk of flooding or coastal change.' For the purposes of this LVIA, it is believed that the Stroud DC v Gladman high court judgement (reference CO/4082/2014), as well as TGN 02/21 by the Landscape Institute, provides the appropriate guidance; therefore, to be valued in terms of the NPPF would require the landscape to show <i>'some demonstrable physical attribute rather than just popularity'</i> .
3.1.6	Last, the framework promotes a <i>'strategic approach to maintaining and enhancing networks of habitats and green infrastructures'</i> (Par 181). Habitat and biodiversity protection and enhancement is a fundamental point for sustainable development and should be considered not just at local scale but as an interaction with wider national and international ecological networks.
3.2	Local Planning Framework
3.2.1	The Site falls within the administrative area of South Cambridgeshire District Council (SCDC) and Cambridge City council (CCC). Planning decisions are regulated by several documents and planning policies, those relevant to the landscape and visual assessment are listed below. <u>South Cambridgeshire Local Plan, South Cambridgeshire District Council, (September 2018)</u> • Policy S/2: Objectives of the Local Plan
3.2.2	This policy sets out the strategic objectives of the local plan, setting out six key objectives to guide development within the district. Objectives include the protection of <i>'the character of South Cambridgeshire, including its built and natural heritage, as well as protecting the Cambridgeshire Green Belt'</i>. • Policy S/4 :Cambridge Green Belt
3.2.3	This policy sets out the purposes of the Cambridge Green Belt, namely to: – <i>'Preserve the unique character of Cambridge as a compact, dynamic city with a thriving historic centre;</i> – <i>Maintain and enhance the quality of its setting; and</i> – <i>Prevent communities in the environs of Cambridge from merging into one another and with the city.'</i>
3.2.4	The <i>'special character of Cambridge and it's setting'</i> is described through a series of factors which include: – <i>'Key views of Cambridge from the surrounding countryside;</i> – <i>A soft green edge to the city;</i> – <i>A distinctive urban edge;</i> – <i>Green corridors penetrating into the city;</i> – <i>Designated sites and other features contributing positively to the character of the landscape setting;</i> – <i>...; and</i> – <i>A landscape that retains a strong rural character.'</i>

- **Policy HQ/1: Design Principles**
- 3.2.5 This policy is prefaced with the acknowledgement that settlements within the district vary in character. *'All new development will have an impact on its surroundings. Development needs to be of an appropriate scale, design and materials for its location and conform to the design principles set out in the policy.'*
- 3.2.6 *'Any development must also take proper care to respond to its surroundings, and create sustainable, inclusive and healthy environments where people would wish to live, work, shop, study or spend their leisure time'.* In order to achieve such design quality, the policy lists fundamental design principles which include protection and enhancement of natural and historic assets, as well as conserving the countryside and open spaces, referring to the District Design Guide SPD and village design guides where appropriate.
- **Policy NH/2: Protecting and Enhancing Landscape Character**
- 3.2.7 This policy focuses on the preservation and enhancement of local and national character and distinctiveness of the landscape as prescribed by existing evidence, such as the National Character Area Profiles.
- 3.2.8 *'The district's landscape is dominated by arable farmland with dispersed woodlands and often low, trimmed hedgerows. As a result, it is a predominantly open landscape, allowing long views. A mosaic of hedgerow, fields, parkland and small woodlands create variety and combine to create an often treed skyline. A greater degree of enclosure and a more detailed landscape is often associated with settlements and the many small river valleys.'*
- **Policy NH/8: Mitigating the Impact of Development in and Adjoining the Green Belt**
- 3.2.9 This policy requires that:
 - *'Any development proposals within the Green Belt must be located and designed so that they do not have an adverse effect on the rural character and openness of the Green Belt.'*
 - *'Where development is permitted, landscaping conditions, together with a requirement that any planting is adequately maintained, will be attached to any planning permission in order to ensure that the impact on the Green Belt is mitigated.'*
 - *'Development on the edges of settlements which are surrounded by the Green Belt must include careful landscaping and design measures of a high quality.'*
- 3.2.10 This policy recognises that the Green Belt is a *'key designation in the district, which protects the setting and special character of Cambridge.'*
- **Policy SI/6: The Development Strategy to 2031**
- 3.2.11 This policy refers to allocation of sites, and refers to the area action plans produced for areas including North West Cambridge, as per the previous development framework 2007-2010. It states that major allocations from the framework *'are carried forward as part of development plan to 031 or until such time as the developments are complete.'*
Local Development Framework, North West Cambridge Area Action Plan (2009)
- 3.2.12 The Area Action Plan (AAP) *'identifies land to be released from the Cambridge Green Belt, to contribute towards meeting the development needs of Cambridge University.'* It established a vision, objectives and set out policies and proposals to guide the development.
- **Policy NW1: Vision**
- 3.2.13 The vision for North West Cambridge is to *'create a new University quarter, which will contribute to meeting the needs of the wider city community, and which will embody best practice in environmental sustainability.'* It also states that a *'revised Green Belt and a new landscaped urban edge will preserve the unique character of Cambridge, enhance its setting and maintain the separate identity of Girton village'.*

- 3.2.14 Additionally, the policy sets out the objectives of the AAP, including:
 - *'a) To contribute to meeting the long-term development needs of Cambridge University;'*
 - *'b) To create a sustainable community;'*
 - *'f) To secure high quality development of both built form and open spaces;'*
 - *'g) To create a community which respects and links with adjoining communities;'*
 - *'i) To maintain the purposes of the Green Belt;'*
 - *'j) To provide an appropriate landscape setting and high quality edge treatment for Cambridge;'*
 - *'k) To provide appropriate separation between Cambridge and the village of Girton to maintain village character and identity;'*
 - *'p) To protect special geological interest, existing wildlife and wildlife corridors and secure a net increase in biodiversity.'*
- **Policy NW2: Development Principles**
- 3.2.15 Policy NW2 sets out a series of development principles to which proposals in the identified area shall adhere. The policy intention is to promote high-quality design to result in *'attractive and distinctive mixed-uses development'* that is well integrated with the city and surrounding countryside. In order to achieve such quality, the proposals are required to:
 - *'Protect and enhance the geodiversity and biodiversity of the site and incorporate historic landscape and geological features;'*
 - *'Provide a high quality landscape framework for the development and its immediate setting;'*
 - *'...'*
- **Policy NW4: Site and Settings**
- 3.2.16 This policy reinforces the requirements for a high-quality built edge to the urban area which shall provide an appropriate setting to Cambridge and maintain the purposes of the Cambridge Green Belt.
- 3.2.17 The explanatory text of the policy refers to the open land between the M11 and the western limit of the built-up area. It explain that as the M11 currently runs through open countryside, *'the corridor of land to be retained would retain an open foreground in views from the motorway. This would soften the urban edge and prevent an oppressive urban character from being created alongside the motorway.'*
- 3.2.18 Notably AAP acknowledges that development will be visible in the landscape and that, therefore, *'It is important that the Masterplan for the area ensures the provision of a complementary high quality and distinctive built edge to the extended urban area and appropriate landscaping.'*
South Cambridgeshire Design Guide Supplementary Planning Document (2010)
- 3.2.19 This Supplementary Planning Document (SPD) forms part of the South Cambridgeshire Local Development Framework (LDF), with a purpose to ensure *'the delivery of sensitively and appropriately designed, sustainable developments.'* The Guide identifies that all *'new development will have an impact on its surroundings. The aim must be that any development, from a major urban extension to Cambridge to an extension to an existing home, takes all proper care to respond to its surroundings, including existing buildings, open spaces and village edges, and ensure an integrated scheme that does not harm local amenity and wherever possible, brings benefits to the area.'*

- 3.2.20 The SPD requires that any new development, *'must sit comfortably in its landscape, taking account of the topography and natural or man-made features. New development should not intrude upon the skyline, with the exception of specifically agreed features selected as landmarks, in the tradition of church spires or towers. ... careful consideration must be given to the height and form of buildings, with the built form broken down to appear as a composition of forms, rather than one large form and utilising trees and other planting to soften the impact on long distance views.'*
- Cambridge Local Plan, Cambridge City Council (2018)
- **Policy 14: Area of Major Change and Opportunity Area – general principles**
- 3.2.21 The Site is located within West Cambridge Area of Major Change (AOMC). According to the policy, development within the AOMC should be of *'highest design qualities'*, including a sustainable approach to design and construction.
- 3.2.22 The policy also requires the development to *'create active and vibrant places that encourage social interaction and meeting, and foster a sense of community'*.
- 3.2.23 Nevertheless, the policy requires development to protect heritage and landscape assets:
- *'seek to protect existing public assets, including open space and leisure facilities. Where the loss of such assets is unavoidable, appropriate mitigation should be provided, including where applicable the replacement of assets in an alternative location, in addition to infrastructure generated by the needs of the development;*
 - *ensure public rights of way are protected, and enhanced where possible;*
 - *develop a new, strong landscape framework that is guided by and incorporates existing positive landscape and townscape features and heritage assets; and,*
 - *where practicable, undertake on-site strategic landscaping to the agreed framework early in the development of the site so that this will become established as development proceeds.'*
- **Policy 19: West Cambridge Area of Major Change**
- 3.2.24 The Site is allocated as an Area of Major Change, and this policy guides specific requirements for this area. Notably, the policy states that:
- *'e. the approach to appropriate development heights will be determined through the OPP (outline planning permission) giving consideration to the sensitivity of the landscape within the Green Belt to the south and west.*
 - *f. proposals respect the important adjacent Green Belt setting to the south and west, and other neighbouring residential uses and views of the city from the west.'*
- 3.2.25 Although the policy sets out a clear expectation and direction for the development aspiration of this area, there is an acknowledgement that *'increase activity may put further pressure on the environment and the amenity of nearby residents'*, in particular in relation to noise and light pollution. This must be considered in the masterplan design as well as sensitivity in relation to the Green belt and western setting of the city.

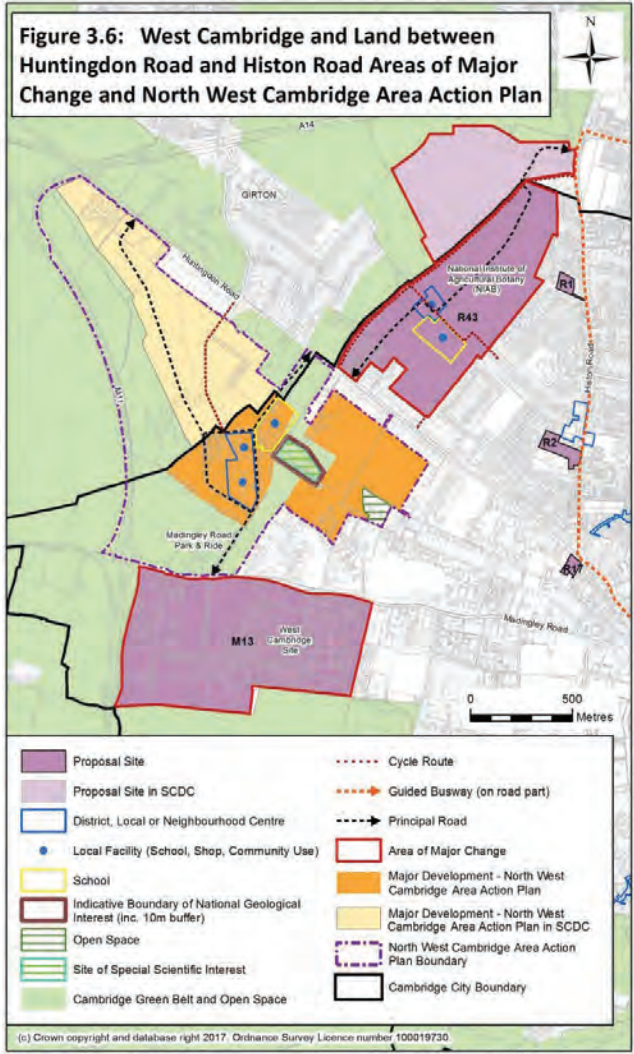


Figure 3 - Area of Major Change plan in the CCC Local Plan 2018

- **Policy 55: Responding to Context**
- 3.2.26 The policy states that *'development will be supported where it is demonstrated that it responds positively to its context and has drawn inspiration from the key characteristics of its surroundings to help create distinctive and high quality places.'*
- 3.2.27 More specifically, the proposal is required to fulfil the following parameters:
- *'identify and respond positively to existing features of natural, historic or local importance on and close to the proposed development site'; and*
 - *'use appropriate local characteristics to help inform the use, siting, massing, scale, form, materials and landscape design of new development.'*
- 3.2.28 The policy aims to enhance and protect the unique character of Cambridge. For this purpose, it is essential to understand the proposal context, including *'land uses, open spaces, the built and natural environment and social and physical characteristics.'* The proposal is required to be appropriate to its context, particularly in terms of scale and form, and *'complement the local identity of an area.'*

- **Policy 57: Designing New Buildings**

3.2.29 This policy identifies desirable qualities for new developments, namely:

- ‘a positive impact on their setting in terms of location on the site, height, scale and form, materials and detailing, ground floor activity, wider townscape and landscape impacts and available views;’ and
- ‘include an appropriate scale of features and facilities to maintain and increase levels of biodiversity in the built environment.’

3.2.30 Once more, the importance of the proposed building appropriateness to its context is highlighted, putting further emphasis on qualities such as scale, height, form, proportion and materiality.

- **Policy 59: Designing Landscape and Public Realm**

3.2.31 This policy promotes a coordinated approach to the design of the open space associated with new development to ensure ‘the design relates to the character and intended function of the spaces and surrounding buildings’. Furthermore, the policy ‘requires existing features including trees, natural habitat, boundary treatments and historic street furniture and/or surfaces to be retained and protected’; proposed materials are to be ‘of a high quality and respond to the context to help create local distinctiveness’.

- **Policy 60: Tall Buildings and the Skyline of Cambridge**

3.2.32 The policy sets out criteria that should be considered to protect or enhance the character and qualities of Cambridge’s skyline, these include:

- ‘location, setting and context – applicants should demonstrate through visual assessment or appraisal with supporting accurate visual representations, how the proposals fit within the existing landscape and townscape;’
- ‘impact on the historic environment - ... including impact on key landmarks and viewpoints, as well as from the main streets, bridges and open spaces in the city centre and from the main historic approaches, including road and river, to the historic core. Tall building proposals must ensure that the character or appearance of Cambridge, as a city of spires and towers emerging above the established tree line, remains dominant from relevant viewpoints as set out in Appendix F;’ and
- ‘scale, massing and architectural quality – applicants should demonstrate through the use of scaled drawings, sections, accurate visual representations and models how the proposals will deliver a high quality addition to the Cambridge skyline and clearly demonstrate that there is no adverse impact.’

3.2.33 The policy describes Cambridge as free from clusters of modern towers and bulky buildings, except for the hospital and airport areas, which contrast with the surrounding low-lying suburbs. Also noted is the difference between the ‘background buildings’ in the historic core and the suburban built form. The former rises between three and five storeys with occasional modern, six storey buildings, while the latter is largely characterised by two storey buildings with only a few areas of three storeys.

3.2.34 Policy 60 goes on to say: ‘Trees form an important element of the Cambridge skyline, within both the historic core and surrounding suburbs. Elevated views from the rural hinterland and from Castle Mound reveal a city of spires and towers emerging above an established tree line. Buildings therefore work with subtle changes in topography and the tree canopy to create a skyline of ‘incidents’, where important buildings rise above those of a prevailing lower scale.’

3.2.35 Appendix F (Tall Buildings and the Skyline) provides further guidance in regard to Policy 60.

3.2.36 Relevant to this assessment are the following criteria listed in Appendix F.6:

- ‘maintain the character and quality of the Cambridge skyline;’
- ‘ensure that tall buildings, as defined in this guidance, which break the established skyline are well considered and appropriate to their context;’ and
- ‘support only new buildings which are appropriate to their context and contribute positively to both near and distant views.’

3.2.37 The Appendix acknowledges that it is the nature of the contextual townscape that defines a tall building. Based on this, in the Cambridge context, a tall building is ‘any structure that breaks the existing skyline and/or is significantly taller than the surrounding built form.’

3.2.38 It goes on to say that within the suburbs (where the Site is located) ‘buildings of four storeys and above (assuming a flat roof with no rooftop plant and a height of 13m above ground level) will automatically trigger the need to address the criteria set out within the guidance.’

3.2.39 The key characteristics of Cambridge’s skyline identified in the Appendix include:

- ‘Trees form an important element in the modern Cambridge skyline, within both the historic core and the suburbs. Many of the elevated views of the city from the rural hinterland and from Castle Mound show a city of trees with scattered spires and towers emerging above an established tree line.’; and
- In the suburbs, ‘the prevailing height of residential buildings is generally two storeys with some more substantial three-storey Victorian and Edwardian buildings on the main approach roads.’

3.2.40 Figure 3 provides a list of ‘Strategic Viewpoints’, which include Red Meadow Hill and Maddingley Rise, two of the vantage points affording significant panoramic views across the city (apart from the tops of tall buildings).

3.2.41 According to the Appendix, ‘views of the historic core and the key buildings within the core are therefore particularly important to protect. In this case, distant views of the historic core from Red Meadow Hill, Lime Kiln Hill, and the Gogs are especially important, as are more localised views of the historic core from Castle Mound, The Backs, and open spaces within and around the historic core.’ Where relevant the Strategic Viewpoints have been considered in this LVB (see Section 5.0).

Figure F.3 Topography and Strategic Viewpoints

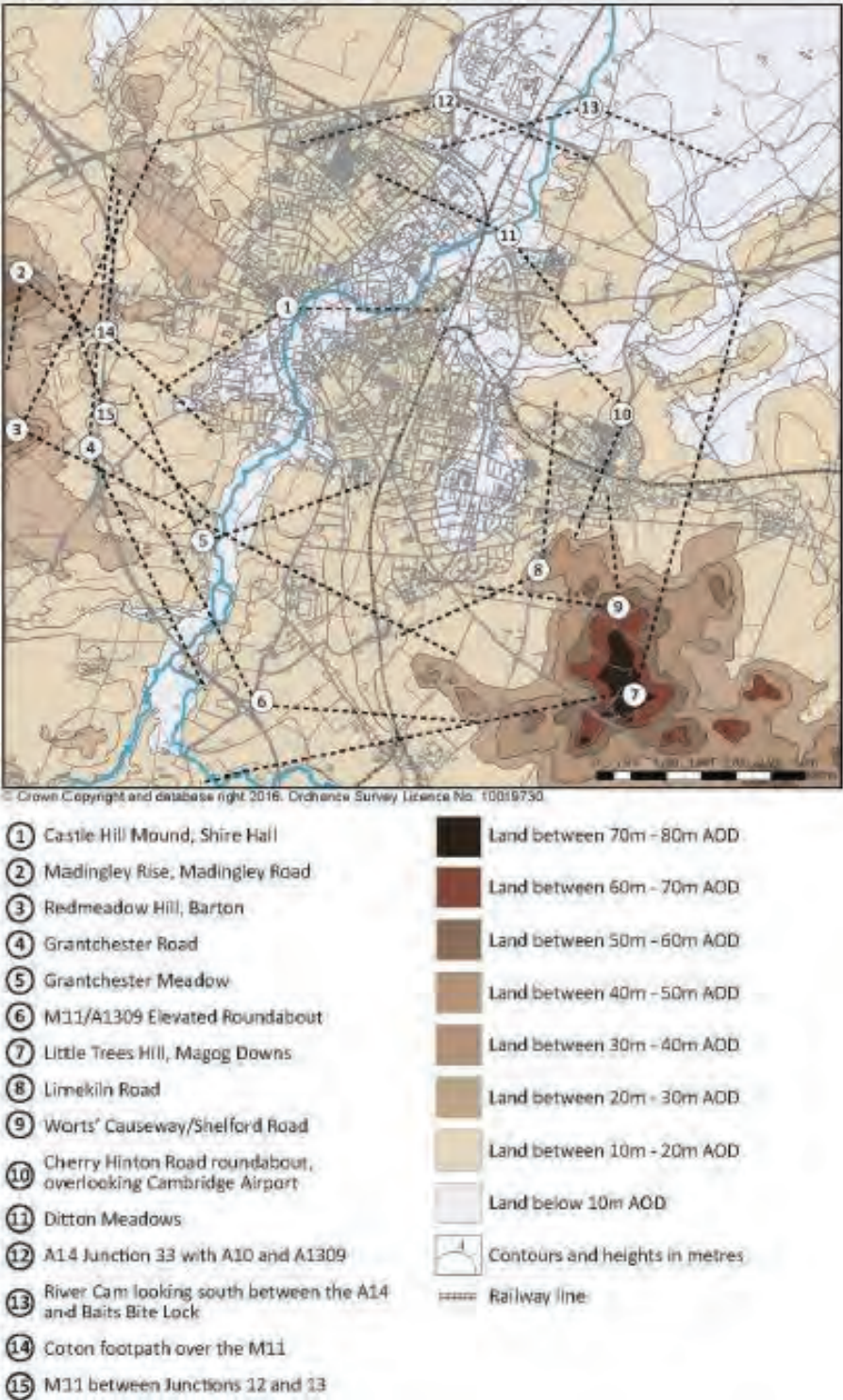


Figure 4 - Figure F.3 in Appendix F, Local Plan 2018

4.0 Landscape Baseline

4.1 Designations

4.1.1 Planning designations and constraints, within 2.5 km of the Site, relevant to the assessment of landscape and visual effects are set out in Table 1 and shown on Map 04 in Appendix 2.

DESIGNATION	PRESENT WITHIN THE SITE	PRESENT WITHIN THE STUDY AREA (2.5KM)
National Parks	No	No
Areas of Outstanding Natural Beauty (AONB)	No	No
Special Landscape Area (or similar local designation)	No	- City Wildlife Site – Adam's Road Sanctuary - SSSI – Traveller's Rest Pit - Coton Country Park
Green Belt	The western and eastern edges of the Site lie within the Green Belt.	The Site abuts the Green Belt to the west and east.
World Heritage Sites	No	No
Scheduled Monuments	No	No
Conservation Areas	No	- Conduit Head Road - West Cambridge - Storey's Way - Howes Place - Catle and Victoria Road - Central
Listed Buildings	No	There are a number of listed buildings within the study area. Please refer to Map 04 in Appendix 2.
Registered Parks and Gardens	No	- American Military Cemetery - Histon Road Cemetery
Recreational Trail	No	The Harcamlow Way
Public Right-of-Way	Yes	There are several Public Rights of Way within the study area. Please refer to Map 04 in Appendix 2.

4.2 Landscape Character

- 4.2.1 To help identify the key characteristics and sensitivity of the landscape within which the Site is located, reference is made to the previously published Landscape Character Assessments. Those applicable to the study area are set out below.
- National Character Area (NCA) Profile 88: Bedfordshire and Cambridgeshire Claylands
- 4.2.2 The NCA Profile describes the key characteristics and environmental opportunities of the Bedfordshire and Cambridgeshire Claylands, describing the natural and cultural features which shape this discrete landscape character area. Those most relevant to the Site and the study area are set out below.
- 4.2.3 The majority of the NCA is identified as sparsely populated, however a *'feeling of urbanisation'* is brought by numerous large towns and transport routes, including Cambridge and the M11 and A14 which fall within the study area. The character area exhibits a diverse building palette, including *'brick, render, thatch and stone.'*
- 4.2.4 Generally, this character area is *'a broad, gently undulating, lowland plateau dissected by shallow river valleys,'* underlain by Jurassic and Cretaceous clays. Above this substrate an arable landscape of *'planned and regular fields bounded by open ditches and trimmed, often species-poor hedgerows'* contrast with fields which are *'irregular and piecemeal'*. Woodland cover throughout the NCA is variable, scattered and comprise *'smaller plantations, secondary woodland, pollarded willows and poplar along river valleys.'*
- 4.2.5 A rich geological and archaeological history is *'evident in fossils, medieval earthworks, deserted villages and Roman roads,'* including Huntingdon Road which is on the alignment of a Roman Road.
- 4.2.6 Overall, tranquillity within the NCA has declined, *'affected by visual intrusion, noise and light pollution from agriculture, settlement expansion and improvements in road infrastructure.'*
- Greater Cambridge Shared Partnership Landscape Character Assessment (February 2021)
- 4.2.7 This assessment considers land outside of the Cambridge Urban Area. Most of the Site is within the Cambridge Urban Area but an area to the north is within the Landscape Character Type (LCT) 2 - Fen Edge Claylands and Landscape Character Area (LCA) 2B - Cottenham Fen Edge Claylands (Map 04 Appendix 2).
- 4.2.8 Key characteristics of LCT 2 relevant to the study area include:
- *'Low-lying, gently undulating landscape with extensive vistas and large skies'*
 - *'Large-scale, open field system defined by a hierarchy of drains, ditches and lodes'*
 - *'Predominantly arable farmland supplemented with small scale pastoral field patterns around settlement edges'*
 - *'Little vegetation cover, limited to dispersed fragments of deciduous woodland, scattered traditional orchards and gappy hedgerows'*
 - *'Hedgerows, shelterbelts and small clumps of trees create a distinctive, localised vegetation pattern in proximity to villages'*
 - *'Dispersed settlement pattern of villages on raised landform at the edge of The Fens and individual farms and cottages'*
 - *'...'*
- 4.2.9 The Fen Edge Clayland presents a landscape dominated by agricultural productivity, with a rich historical context and distinct geographical features. This area serves as a transition zone between the lower Fen floodplain to the north and higher, agriculturally

- suitable lands to the south. It is described as *'a productive landscape that is dominated by arable agriculture, interspersed with occasional pasture on lower-lying land and fields used for horticulture including traditional orchards.'*
- 4.2.10 The vegetation in this landscape is relatively sparse, characterized by small clusters of trees and occasional woodlands, particularly around settlements. Field boundaries are primarily defined by ditches and drains, with some hedgerows present, especially near populated areas: *'The fields are predominantly bound by ditches and drains with occasional trimmed, often gappy hedgerows and tree shelter belts along roads and tracks. Hedgerows are more common around the smaller scale field networks in proximity to settlements, particularly those on the edge of Cambridge to the south of the LCT.'*
- 4.2.11 The area's settlement pattern reflects its historical importance, balancing access to both wetland resources and agricultural land: *'The Fen Edge Clayland is a well-settled landscape that has traditionally been an important location for settlement, being above the Fen floodplain and with easy access to both the wetland resources to the north and the higher land, suitable for agriculture to the south.'*
- 4.2.12 The built environment showcases a consistent architectural style, influenced by the limited local building materials: *'Traditional building materials within the villages include gault brick, render and thatch. Due to the geology of the area, there were limited building material resources, which has influenced the vernacular architecture with a consistency of appearance.'*
- 4.2.13 Transportation infrastructure plays a significant role in shaping the area, with major roads like the A14 and A10 connecting key locations. Additionally, a network of bridleways, footpaths, and byways crisscross the landscape, providing connectivity between villages and following the lines of ditches and drains.
- 4.2.14 While the landscape is primarily shaped by human activity and agriculture, it's worth noting that this has resulted in limited ecological diversity: *'This is not an ecologically rich area, with few designated sites across the LCT.'*
- 4.2.15 Of the key features mentioned for this LCT the *'historic, disperse settlement pattern of villages and individual farms and cottages'* and the *'strong sense of historic settlement and land use'* appear to be the only ones relevant to the study area.
- 4.2.16 However it's worth noting that the following forces for change are mentioned:
- *'Intensive arable agriculture has resulted in field expansion and removal of key habitats including hedgerows.'*
 - *'Pressures for development which would change the character of the Fen Edge villages through further expansion and densification'*
 - *'...'*
- 4.2.17 The overall condition of this landscape is described as moderate, with particular emphasis on the limited ecological value, intact historic landscape of The Fens to the north of the LCT (i.e. outside the study area) and hierarchy of drainage channels and historic tracks connecting the settlements.
- 4.2.18 The strength of character is also described as *'moderate with few distinguishing features'*. Traditional orchards are a feature, however their network is in decline, and the historic linear form of the Fen Edge villages with modern estates that *'have altered the overall form of the settlements, although are generally well integrated by hedgerows, copses and shelterbelts where appropriate.'*
- 4.2.19 Based on the above the assessment lists key sensitivities, with the following are of particular relevance to the Site and study area:
- *'Network of historic ditches and droveways that contribute to the area's sense of place'*
 - *'Peaceful, rural open character of the landscape'*

- Hedgerows, shelterbelts and small clumps of trees forming a distinctive, localised vegetation pattern in proximity to villages
 - Remaining pockets of high ecological value landscape features such as grazing marsh alongside watercourses and scattered deciduous woodland'
- 4.2.20 Finally, 'the overall management objective for LCT 2 is to conserve the rural character and the important surviving landscape features such as traditional orchards, droves, drains and linear village cores. It would be also appropriate to enhance those features that are declining or are incongruous in the landscape, such as traditional orchards and modern village edges.'
- 4.2.21 In order to do so the following landscape guidelines are provided:
- 'Conserve and restore traditional orchards whilst maintaining the productive Claylands arable landscape
 - Conserve and enhance existing watercourses, drains and ditches to maintain historic features and enhance ecological value of the farmed landscape
 - Conserve and enhance the regular small-scale pastoral fields, shelter belts and hedges at village edges
 - Conserve and enhance existing hedgerows and consider opportunities for re-planting hedgerows where these have been lost/become fragmented
 - Encourage opportunities to expand and link woodland, hedgerows and other semi-natural habitats to benefit biodiversity whilst managing the open character of the landscape'
- 4.2.22 Furthermore, in order to integrate development in this landscape the following recommendation should be followed:
- 'Ensure new developments on the edges of villages are integrated by wide hedgerows, copses and shelterbelt planting reflecting the local mixes
 - Ensure new developments integrate/connect with existing Public Rights of Way (PROW) within development layout
 - Ensure new developments reflect the form, scale and proportions of the existing vernacular buildings of the area and pick up on the traditional building styles, height, materials, colours and textures of the locality
 - Retain hedges and introduce them as boundaries alongside roads outside village cores
 - Integrate water features, such as ditches dykes and ponds, into new developments as part of open spaces
 - Avoid the use of standardised and intrusive urban materials, street furniture, lighting and signage as part of traffic calming measures wherever appropriate'.
- 4.2.23 As part of LCT 2, LCA 2B is described as a gently undulating landscape with 'a small number of minor streams flow through the south of the area from the Wooded Claylands and join the more regimented drainage network of drains and ditches that extends across the wider area'.
- 4.2.24 This is a predominantly rural landscape, albeit urban influence is evident with several medium sized villages (including Girton) and recent suburban developments along the major route network in proximity of Cambridge. 'Settlement generally sits low in the landscape and is well screened by mature trees, shelterbelts and hedgerows, but glimpses of built form can often be seen, maintaining a settled rural character between villages. Rows of poplar trees, occasional lines of telegraph poles and pylons are vertical features which interrupt the skyline.'

- 4.2.25 The assessment also states that 'The proximity of this rural LCA to Cambridge means that there are a number of localised urban influences particularly in the south and east of the area that locally are discordant and detract from the tranquillity experienced elsewhere within the LCA. These include the major road network and industrial sites such as the factory at Impington and Cambridge Research Park.'
- 4.2.26 LCA 2B characteristics includes;
- 'Well settled rural landscape comprising a number of large villages with historic linear cores located on elevated 'islands'
 - 'Urban influences associated with the urban edge of Cambridge and major road network in the south which are discordant with the otherwise rural character'
- 4.2.27 Specific landscape sensitivities for LCA 2B include:
- 'Framed, long views between vegetation from villages across open, arable fields
 - ...
 - Pressure for recreation'
- 4.2.28 And specific landscape guidelines include:
- 'Ensure new development is integrated into the landscape sympathetically, is in keeping with the open, rural character, and does not affect long, framed views
 - Conserve parkland and enhance the specific features that give character and its context within the wider landscape in areas where it has been fragmented
 - Ensure land developed for recreation enhances existing landscape features, creates links between villages and recreational assets and is in keeping with the open, rural character'
- Cambridge Inner Green Belt Boundary Study 2015
- 4.2.29 Although a Green Belt study, this document provides the most up to date description of Cambridge's townscape character. The Site is located in Townscape Character Type (TCT) Early 21st Century Mixed Use Development and Townscape Character Area (TCA) 8 North West Cambridge (Figure 4).
- 4.2.30 The TCT includes land which was previously designated Green Belt, and contains varied development, from low-rise flats, and linked houses, to townhouses, and slightly higher-rise residential and commercial developments.
- 4.2.31 The TCA comprises the land to the North West of Cambridge, between the M11, A14 and edge of Cambridge. The area consists of ongoing development, and a number of bespoke buildings to the west side of Huntingdon Road.

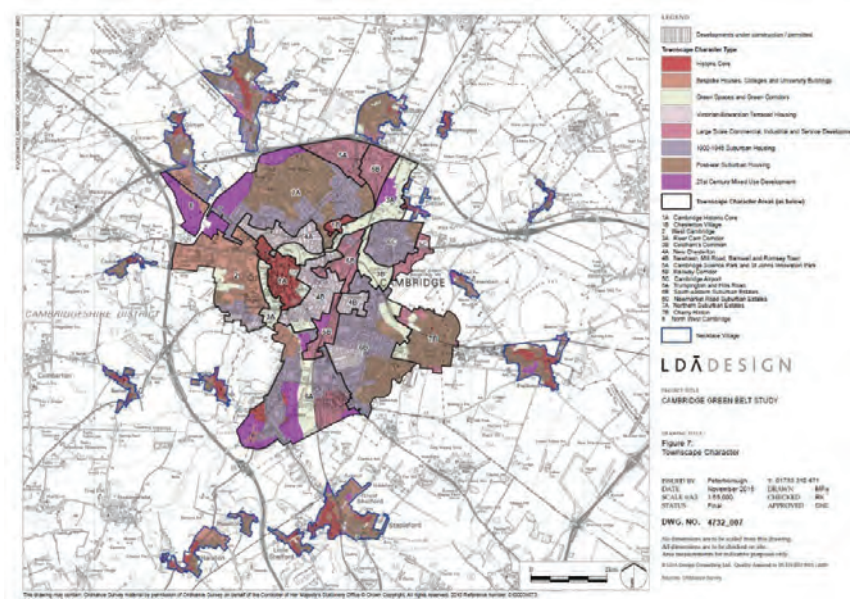


Figure 5 - Townscape Character Areas

4.3 Local Landscape Context

4.3.1 The Site is located between Cambridge and the M11/A14, approximately 2.5km from central Cambridge. It is in a prime transitional location where the countryside meets this historical urban centre. As the Green Belt policy was removed from the Site, the rural character has already started evolving into a modern urban settlement, which will eventually define the character of this gateway into Cambridge.

Landform (Map 03, Appendix 2)

4.3.2 Although the 1:15,000 scale map in Appendix 2 shows the Site as relatively flat, with the ground levels between 15-20m AOD toward the River and M11 and 20-25m AOD across much of the Site, the detailed topography survey picked up a more granular ground variation which is partially the result of groundworks happened with Phase 1 of the development

4.3.3 Land within the study area rises steeply around the American Cemetery, starting around 1.5km from the Site. It rises from 30m up to 60m AOD. The rest of the land within the study area is between 10-25m AOD, dropping low around tributaries and rivers.

Vegetation Cover (Map 08, Appendix 2)

4.3.4 There are several small areas of woodland habitat around the study area, particularly around the M11 junctions, and tree belts along the edges of field boundaries. None affords an ancient designation.

4.3.5 Map 02 also evidences a wooded urban area along Huntington Road thanks to vegetation within private gardens.

Built Form (Map 11 in Appendix 2)

4.3.6 The townscape of the study area is divided in two distinct types: the modern developments at Eddington and Darwin Green and the older residential areas associated with Girton and Cambridge historic expansions (more below in the Historic Context).

4.3.7 The older developments are characterised by a finer urban grain with generous gardens contributing to a strong green cover. This contrasts the dense layout of the new developments with less private green but more generous public and infrastructure green

features. The latter is also characterised by the introduction of flat blocks which creates a more articulated skyline and a different sense of height and enclosure along the local street compared to a typical road section in the older residential areas.

4.3.8 There are limited listed buildings and no Conservation Areas, however, it is noted that the award-winning Alison Brooks Rubicon in Eddington is a distinctive local architecture (Figure 5).

4.3.9 Finally, the network of public open spaces, particularly in the new developments, provides a connection to the wider countryside and opportunities for the local community for informal and formal recreational activities.

Flood Risk and Drainage (Map 09, Appendix 2)

4.3.10 There are several drains within the study area, as well as Washpit Brook which runs across the Site. The flood risk zones (excluding surface water) are largely located to the north of the study area, outside of the Site, tracing some of this existing ditches.

Historic Context (Map 10a, b and c)

4.3.11 The area to the northwest of Cambridge has been rural agricultural land since pre-1886. The small settlement of Girton is to the north of the Site, on the edge of Huntingdon Road, which runs from the centre of Cambridge towards Huntingdon to the north and east of the Site. Madingley Road runs to the south of the Site from Cambridge centre towards Madingley. The small village of Coton is 2km from the Site to the southwest.

4.3.12 The land was a patchwork of smaller and larger fields, with hedgerows, tree belts and drains as the field boundaries. A few small areas of woodland are dotted around the study area. However, by 1927 large orchards appear to the north and south of the Site.

4.3.13 By 1927 Girton has grown along Huntingdon Road. Cambridge has also grown, with more built form to the north western edge of Cambridge City, but the separation with Girton is still evident.

4.3.14 By the 1960's the urban expansion of Cambridge and Girton has taken more land within the study area, and the separation between the two on Huntington Road hangs on a couple of fields.

4.4 Landscape Value

4.4.1 Landscape value is considered in accordance with the relevant Landscape Institute literature (TNG 02/21). The baseline study identifies two distinct areas: the agricultural landscape (associated with LCA 2B) and the Cambridge urban edge.

4.4.2 The 2021 Assessment considers the countryside landscape associated with LCA 2B to be of '*moderate condition*' (see par. 4.2.17 above) and for the same reasons, including limited public access and interference of the M11 and A11 infrastructure with the scenic and perceptual qualities, this landscape area is considered of medium value.

4.4.3 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. There are some listed buildings but no Conservation Areas, therefore time depth is not readily evident. The most recent development appears of high quality design, with good materials, skyline articulation and massing responsive to context, all designed following a landscape-led approach which provides a variety of green spaces, some for active public use. Finally, there are some distinctive architectural elements, such as the award-winning Alison Brooks Rubicon residential blocks to the south of Phase 1. Overall the townscape area is considered of medium-high value.



Figure 6 - Alison Brooks Rubicon and green open space at Eddington

5.0 Visual Baseline

5.1 Representative Viewpoints

- 5.1.1 Visual receptors relevant to the Proposed Development have been selected taking into consideration the 2012 ES and the existing Phase 1 development. The following visual receptors will be considered in the LVIA:
- Motorists and pedestrians along Huntingdon Road, Madingley Road, The Avenue, Grantchester Road and Cambridge Road;
 - Recreational users of PRowS 99/5, 55/6, 154/3 and The Ridgeway;
 - Visitors of Redmeadow Hill;
 - Residents in Phase 1; and
 - Ramblers at Brook Leys.

5.1.2 Seventeen viewpoints were selected to represent “typical views” for each identified receptor at varying distances and orientation from the Site. These are presented on the viewpoint location map in Appendix 2.

5.1.3 For each of the selected viewpoints, a representative panorama or photograph (Type 1 technical visualisations as per TGN 06-19¹) is provided in Appendix 2.

Viewpoint 1 – Cambridge Road, American Cemetery

- 5.1.4 This viewpoint represents the view experienced by visitors of the American Cemetery, and road users on Cambridge Road. The viewer is looking east towards the Site.
- 5.1.5 The Site is partially screened by intervening vegetation and rising topography; however the top storeys of the existing development are visible over the tree canopies. The skyline is largely wooded but interrupted by the emerging Cambridge urban edge to the left of the view.

Viewpoint 2 – Madingley Road/A1303

- 5.1.6 This viewpoint represents the view experienced by road users on Madingley Road. The viewer is looking northeast towards the Site.
- 5.1.7 The Site is screened by an existing hedge, which has grown to over 2m high, therefore none of the Site is visible from this location during summer, however, some visibility is expected in winter.

Viewpoint 3 – PRow 154/3

- 5.1.8 This viewpoint represents the view experienced by pedestrians on PRow 154/3. The viewer is looking east towards the Site.
- 5.1.9 The view is from the PRow 154/3, between short sections of vegetation, across an agricultural field. The skyline is made up of a mixture of the existing built form at Phase 1 and the trees that border the edge of the agricultural field.

Viewpoint 4 – Madingley Road, Bridge over the M11

- 5.1.10 The viewpoint represents the view experienced by users of Madingley Road, looking north over the M11 towards the Site.

¹ Landscape Institute Technical Guidance Note, Visual Representation of Development Proposals, Technical Guidance Note 06/19, 17 September 2019, Landscape Institute

- 5.1.11 The view is enclosed by the existing trees on either side of the M11, however, during winter there would be more visibility of the background. A small section of arable field is visible in the distance. The skyline is made up of the trees on either side of the M11, and the trees on fields further away.
- Viewpoint 5 – PRoW 55/6, Bridge over M11**
- 5.1.12 This viewpoint represents the view experienced by users of the PRoW bridge over the M11. The viewer is looking north.
- 5.1.13 This viewpoint is dominated by the M11 and the trees that line the motorway. The trees are large, mature and have a thick canopy, with little seen over the top of them, however more visibility of the background is expected in winter. The skyline is consistently wooded however some cranes are visible in the distance where Phase 1 is.
- Viewpoint 6 – M11 - south**
- 5.1.14 This viewpoint represents the view experienced by motorists on the M11. The viewer is looking east towards the Site.
- 5.1.15 The viewpoint is through a gap in the trees along the edge of the M11. Further trees screen, in summer, the view towards the Site. A glimpse of the existing development Phase 1 can be viewed through a gap in the vegetation.
- Viewpoint 7 – Red Meadow Hill**
- 5.1.16 This viewpoint represents the view experienced by pedestrians on Red Meadow Hill. The viewer is looking north towards the Site.
- 5.1.17 The viewpoint is dominated by wildflower and trees on Red Meadow Hill. Field boundary trees and hedgerows are visible in the distance, creating a treed landscape between Red Meadow Hill and the Site.
- 5.1.18 Part of the existing development at Phase 1 is visible in the far distance, more is likely to be visible in winter although filter by the tree canopies in the middle ground. The skyline appears largely wooded in summer, however it is interrupted by Phase 1 and key heritage landmarks.
- Viewpoint 8 – M11- north**
- 5.1.19 This viewpoint represents the view experienced by users of the PRoW 99/5, looking southeast towards the Site.
- 5.1.20 In summer, the view is enclosed by vegetation along the footpath, therefore visibility towards the Site is limited, more is expected in winter. The skyline is wooded but interrupted by the elements in the foreground.
- Viewpoint 9 – PRoW 99/5 - West**
- 5.1.21 This viewpoint represents the view experienced by users of the PRoW 99/5, looking south towards the Site.
- 5.1.22 The existing Phase 1 development is visible between the hedgerow planting, the trees and the bund in the distance. The view shows a glimpse of the Site, where there is a gap in the existing hedgerow. The bund, presumably temporary, also hides part of the development from view.
- Viewpoint 10 – PRoW 99/5 - East**
- 5.1.23 This viewpoint represents the view experienced by users of the PRoW 99/5, looking south towards the Site.
- 5.1.24 The existing Phase 1 development is not visible from this viewpoint. Several farm buildings are present to the left of the photograph, with longer views across the countryside to the right side of the photo. The skyline is made up of some vegetation in

- the distance, the continuation of the pastoral field to the foreground and the farm buildings.
- Viewpoint 11 – The Avenue**
- 5.1.25 The viewpoint represents the view experienced by users of The Avenue, the road that joins Madingley to the A1307. The viewer is looking southeast.
- 5.1.26 The view is across arable fields, through a gap in the hedgerow along The Avenue. Incidental trees border the next field boundary, with a tree belt lining the far boundary of the further field. A glimpse of the existing Phase 1 development is visible between trees and a bund.
- 5.1.27 The skyline largely wooded but interrupted by the Phase 1 development.
- Viewpoint 12 – Grantchester Road**
- 5.1.28 The viewpoint represents the view experienced by users of Grantchester Road, looking north towards the Site.
- 5.1.29 The viewpoint is dominated by the view of the M11. The existing Phase 1 development is visible in the distance. Trees line the M11 and adjacent fields, with gaps providing views through to arable fields, in winter more visibility of the background is expected albeit filtered by the tree canopies.
- 5.1.30 The skyline largely wooded but interrupted by the Phase 1 development.
- Viewpoint 13 – Rooftop of Hyatt Centric Hotel**
- 5.1.31 The viewpoint represents the view experienced by visitors to the rooftop of Hyatt Centric Hotel, looking west.
- 5.1.32 The view shows the buildings within Phase 1 from an elevated position. It also shows parts of the rooftop of the Hyatt Centric Hotel. In the background, there are fields and woodland that make up the rural countryside west of Cambridge. The skyline is largely wooded to the centre of the view, with the built form of Phase 1 to either side of the view.
- Viewpoint 14 – The Ridgeway - south**
- 5.1.33 The viewpoint represents the view experienced by pedestrians and cyclists of Ridgeway near to Loverose way and Milne Avenue looking west.
- 5.1.34 The viewpoint shows the current surface of Loverose Way, with the foreground cleared of planting. Further back is the bund that partially screens phase 1 development, and existing trees which form the edge of the M11 and woodland blocks that are situated next to the M11. In the background more trees are visible, as well as some agricultural land.
- 5.1.35 The skyline is largely wooded.
- Viewpoint 15 – The Ridgeway - north**
- 5.1.36 The viewpoint represents the view experienced by pedestrians and cyclists using The Ridgeway cycle footpath, looking south.
- 5.1.37 The viewpoint is dominated by open fields of weeds and wildflowers, with bunds to the left and right of the view, and a larger one further back to the centre of the view. Further back are trees that line the M11, and a woodland block adjacent to the M11. In the background, more woodland is visible. The skyline is largely wooded.
- Viewpoint 16 – Pheasant Drive**
- 5.1.38 The viewpoint represents the view experienced by users of Pheasant Drive and the cycle/pedestrian route, looking east, across Turning Way.
- 5.1.39 The view is looking towards the Phase 1 public open space. Trees and shrubs along Turning Way provide the foreground, with a new plantation of trees within the public open

- space providing the background. Glimpsed views to the north show the open grassland of the Site.
- 5.1.40 The skyline is dominated by Phase 1 trees along the road and to the open space.
- Viewpoint 17 – Brook Leys**
- 5.1.41 The viewpoint represents the view experienced by users of the Phase 1 public open space, looking northeast.
- 5.1.42 The view shows an open area of grassland, with grass mounds behind the fencing. To the back of the view, there are a number of trees, which make up most of the skyline.

6.0 Conclusion

- 6.1 Receptors**
- 6.1.1 This initial baseline study and the information gathered during the site visit, suggest that the following receptors will be affected by the proposed development and will be subject to further analysis within the LVIA.
- 6.1.2 Visual receptors:
- Motorists and pedestrians along Huntingdon Road, Madingley Road, The Avenue, Grantchester Road and Cambridge Road;
 - Recreational users of PROWs 99/5, 55/6, 154/3 and The Ridgeway;
 - Visitors of Redmeadow Hill;
 - Residents in Phase 1; and
 - Ramblers at Brook Leys.
- 6.1.3 The Landscape Institute and Institute of Environmental Management & Assessment guidance defines landscape receptors as ‘*overall character and key characteristic, individual elements or features, and specific aesthetic or perceptual aspects of the landscape*’. Therefore, landscape receptors are divided into character areas/types and landscape components.
- 6.1.4 Landscape character areas/type:
- The Landscape Character Area: 2B Cottenham Fen Edge: This receptor is associated with the distinctive countryside setting of local PROW, the city and, therefore, the Cambridge Green Belt; any direct or indirect impacts caused by the proposed development could compromise the primary function of this key landscape policy area.
 - The Local Townscape Character – Early 21st Century Mixed Use Development: This receptor defines a key gateway edge of Cambridge, which is appreciated from major routes (the M11 and A14) and interfaces directly with the surrounding countryside.
- 6.1.5 Landscape components:
- The Site: This receptor is currently characterised by an unmanaged meadow covering a peculiar, man-made topography. Despite its rural qualities, it is allocated for development in the Local Plan and only the northern and western edges are retained in the Green Belt policy.
 - The Skyline of Cambridge: Although outside the Cambridge City authority area, the Proposed Development is continuous to the city and will contribute to this receptor, which currently affords a distinctive character associated to heritage assets and a strong vegetative cover.
 - Network of ditches: These water features are key expressions of the historical depth of the Fen’s landscape.
 - Tranquillity: This receptor is distinctive of the countryside landscape and key to the recreational experience along local PROWs.
 - Vegetation cover: in absence of large woodland blocks, the vegetation pattern of hedgerows and shelterbelt is distinctive of the local landscape and reminiscent of the historic village settlements.

6.2 Expected Effects

- 6.2.1
- The definitive development impact on the identified receptors will be revealed by the completion of the LVIA. However, this preliminary baseline assessment concludes that the following visual and landscape effects are to be expected:
- Loss of a rural landscape introducing an urban character to the setting of ramblers on the local PRow, road users and residents of Phase 1.
 - Creation of a new gateway townscape character that will clearly define the extent of Cambridge and its interface with the surrounding countryside.
 - Extension of the urban interference with the wooded skyline experienced in vistas towards Cambridge from the adjacent countryside.
- 6.2.2
- Impacts on the Site's rural character associated with the change in land use are intrinsic to the Development Plan allocation. However, through the achievement of high-quality design effects on local landscape character could be mitigated and significant adverse effects avoided.
- 6.2.3
- However, it is likely that visual amenity experienced by the identified visual receptors will be subject to a considerable scale of change, which will alter positive baseline features. Therefore, significant and adverse visual effects are likely, in accordance with the conclusions of the 2012 ES.

APPENDIX 1
METHODOLOGY

Introduction

The purpose of the Landscape and Visual Impact Assessment (LVIA) is to identify the potential effects on the landscape character and the changes to views experienced by the inhabitants.

LVIA is either carried out formally as part of the Environmental Impact Assessment (EIA) process or informally as a contribution to a planning application to provide a general understanding of the environmental effects of a development. In both cases the general principles and approach remain the same, although the approach for a non EIA development may be simplified and classification of significance is not a requirement.

It is important to note that there is a distinction to be made between landscape and visual effects:

- Landscape effects are the result of a change to the fabric, character or quality of the landscape as a result of development. They do not have to be seen; and
- Visual effects result from a change in views or the visual amenity experienced by people.

This assessment methodology has been developed from the guidance provided in the following publications:

- ‘Guidelines for Landscape and Visual Impact Assessment’ (GLVIA), Third Edition Landscape Institute & Institute of Environmental Management and Assessment 2013;
- ‘An Approach to Landscape Character Assessment’ Christine Tudor and Natural England, October 2014.

It should be noted that the above guidance does not dictate a prescriptive methodology, instead it encourages practitioners to develop transparent and logical methods, using standardised terminology and which are proportionate the type and size of development proposed.

The following adopted methodology sets out the general approach to the LVIA process.

Assessing Landscape Effects

The Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA3) (Landscape Institute and Institute of Environmental Management and Assessment, 2013) states:

‘An assessment of landscape effects that deals with the effects of change and the development on the landscape as a resource. The concern ... is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character.’

In first instance, based on the analysis of the baseline findings, components of the landscape that are likely to be affected by the scheme are identified as landscape receptors. These can be *‘overall character and key characteristic, individual elements or features, and specific aesthetic or perceptual aspects of the landscape’*.

In order to assess the significance of landscape effects the landscape sensitivity of the identified landscape receptor is considered with the magnitude of change of the identified effects on the landscape.

Sensitivity of the landscape receptors

The sensitivity of the landscape as a whole, or its individual characteristics, are determined by the value placed on them and their susceptibility to change. Landscape sensitivity is categorised as high, medium or low.

Landscape value is based on a range of features that may include the presence or absence of landscape designations, landscape condition /scenic qualities, rarity/representativeness, conservation interests; recreational value; perceptual qualities such as tranquillity; and historical or cultural associations. The absence of a landscape planning designation does not mean that an area is of ‘low’ landscape value. Likewise it should be noted that a landscape of high value may not always equate to areas of high landscape quality.

Landscape susceptibility is defined as *‘The ability of the landscape (whether it be the overall character or quality/condition of a particular landscape type or area, or an individual element and/or feature, or a particular aesthetic and perceptual aspect) to accommodate the proposed development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies’* (Paragraph 5.40 of GLVIA3).

Criterion used to categorise landscape sensitivity, in relation to Paragraphs 5.39 – 5.47 of GLVIA3, are described in Table A1- Landscape Sensitivity.

Table A1 Landscape value and susceptibility

SCALE	FACTORS INFLUENCING VALUE	FACTORS INFLUENCING SUSCEPTIBILITY
High	Designations: Internationally or nationally designated landscape /landscape features or their setting. Condition/Quality: Landscape /features are intact and/or in good condition Scenic Quality: High aesthetic appeal Rarity: Rare landscape features or rare in a regional or national context Conservation Interest: Rich and/or diverse nature conservation features Recreation Value: A landscape /feature that makes a large contribution to the public's recreational experience Perceptual Aspects: High level of wildness and/or tranquillity	High Susceptibility The landscape (or individual landscape receptor) cannot accommodate the proposed development without notable consequences for the maintenance of the baseline and/or landscape planning policy.

SCALE	FACTORS INFLUENCING VALUE	FACTORS INFLUENCING SUSCEPTIBILITY
	Associations: High level of historic and/or cultural associations	
Medium	Designations: Locally designated landscapes or features. Condition/Quality: Some features or sub-areas are intact and/or in good condition. Scenic Quality: Of moderate aesthetic appeal. Rarity: Distinctive landscape features that are replicated elsewhere in a regional or national context. Conservation Interest: Some nature conservation features. Recreation Value: Makes a moderate contribution to the public's recreational experience. Perceptual Aspects: Has a limited level of wildness and/or tranquillity but also contains some detractive elements. Associations: Limited historic and/or cultural associations.	Medium Susceptibility The landscape (or individual landscape receptor) has some ability to accommodate the proposed development. There would be some consequences for the maintenance of the baseline and/or landscape planning policy.
Low	Designations: Non-designated landscapes /landscape features. Condition/Quality: A landscape /features are rarely intact and/or are in poor condition. Scenic Quality: Little or no aesthetic appeal. Rarity: Few if any, distinctive landscape features or is extensive in a regional or national context, Conservation Interest: Few, if any, nature conservation features. Recreation Value: Makes little or no contribution to the public's recreational experience. Perceptual Aspects: Little or no level of wildness and/or tranquillity	Low susceptibility The landscape (or individual landscape receptor) has the ability to readily accommodate the proposed development without undue consequences for the maintenance of the baseline and/or landscape planning policy.

SCALE	FACTORS INFLUENCING VALUE	FACTORS INFLUENCING SUSCEPTIBILITY
	Associations: Without historic and/or cultural associations.	

Evaluating the magnitude of landscape effects

The magnitude of landscape effects resulting from the construction and/or the operation of a particular development is categorised as high, medium, low or negligible. In accordance with the approach advocated in Paragraphs 5.48 – 5.52 of GLVIA3 the magnitude of landscape effect considers the size and scale of the change, the geographical extent over which each landscape effects would be felt and their duration and reversibility.

Criterion used to categorise landscape effect are listed in Table A2 -Magnitude of Landscape Effect

Table A2 - Magnitude of Landscape Effect

MAGNITUDE OF LANDSCAPE EFFECTS	KEY DETERMINING CRITERIA
High	Size and/or scale: the extent and relative proportion of the existing landscape element(s) to be lost would be large and/or the lost landscape element(s) make a key contribution to landscape character and/or value. Introduction of new landscape elements that would be likely to be perceived to be a dominant landscape characteristic. Large scale alteration to the aesthetic and perceptual characteristics of the landscape. Geographical extent: effects would be discernible across a large majority or the entirety of the receptor. Duration and reversibility of effects: effects of the introduction of new landscape features would be long-term i.e. will last for over 15 years or will be permanent. Loss of landscape features that are irreplaceable or can only be replaced in the long-term.
Medium	Size and/or scale: the extent and relative proportion of the existing landscape element(s) to be lost would be moderate and/or any lost landscape elements make a moderate contribution to landscape character and/or value. Introduction of new landscape elements that would be likely to be perceived to be a prominent landscape characteristic. Moderate scale alteration to the aesthetic and perceptual characteristics of the landscape.

	Geographical extent: effects would be discernible across a moderate proportion of the receptor. Duration and reversibility of effects: effects of the introduction of new landscape features would be medium-term i.e. will last for between 5 and 15 years. Loss of landscape elements that can be fully replaced within the same time period
Low	Size and/or scale: the extent and relative proportion of the existing landscape element(s) to be lost would be minor and/or any lost landscape elements make only a minor contribution to landscape character and/or value. Introduction of new landscape elements that would be likely to be perceived to be a small-scale landscape characteristic. Small scale alteration to the aesthetic and perceptual characteristics of the landscape. Geographical extent: effects would be discernible across a small proportion of the receptor area and/or restricted to the close vicinity of the development site. Duration and reversibility of effects: effects of the introduction of new landscape features would be short-term i.e. will last for between 1 and 5 years. Loss of landscape elements that can be fully replaced within the same time period.
Negligible	Size and/or scale: the extent and relative proportion of the existing landscape element(s) to be lost would be barely perceptible and/or any lost landscape elements make a minimal or no contribution to landscape character and/or value. Introduction of new landscape elements that will be likely to be imperceptible. Minimal alteration to the aesthetic and perceptual characteristics of the landscape. Geographical extent: effects would only be discernible within the development site or immediately alongside it. Duration and reversibility of effects: effects of the introduction of new landscape elements would last for less than a year. Any loss of landscape elements can be fully replaced immediately.

Assessing Visual Effects

GLVIA3 defines a visual impact assessment as follows:

‘An assessment of visual effects deals with the effects of change and development on the views available to people and their visual amenity. assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements’.

The Zone of Theoretical Visibility (ZTV), which forms the visual baseline, identifies ‘land that, theoretically, is visually connected with the proposal.’ Through the baseline study it is, therefore, possible to identify the individuals of groups of people that will be affected

by the change in views and visual amenity, these are called visual receptors. For each visual receptors a viewpoint from which the proposal is seen is identified.

Similarly, to the assessment of the landscape effects, the significance of visual effects is also defined by the combination of the visual receptor sensitivity with the magnitude of change assessed for each viewpoint.

Viewpoints photography

Consultation with the Local Authority is undertaken to decide appropriate technical visualisation Types. In absence of such liaison, appropriate Visualisation Type and AVR will be considered based on the proportionate approach as per Landscape Institute guidance (Visual Representation of Development Proposals, Landscape Institute Technical Guidance Note, 06/19). Detailed methodology for the technical visualisations is provided with the relevant report. Unless otherwise stated, this will also follow the Landscape Institute TGN 06/19.

Baseline photography in Appendix 3 is undertaken as per visualisation Type 1 requirements in the Landscape Institute TGN 06/19. A full-frame camera (Canon EOS 6D Mark II) with a fixed 50mm focal lens (Canon EF 50mm f/1.8 STM) is used with no tripod. A single planar image or a cylindrical panorama as appropriate is used to show the representative receptor view. The cylindrical panorama is built with Photoshop Automerge.

For each viewpoint, essential data are reported within Appendix 3. The grid coordinates are taken from the GPS Data provided by the camera, this is checked on Google Earth and adjusted to be representative of the actual location if necessary. Similarly, the elevation height is a combination of the data provided by the Camera, OS map and Google Earth.

It should be noted that the images taken from the viewpoint illustrate the views from these locations, but there is no substitute for visiting the site personally to ascertain the views and potential impacts.

Visual receptors sensitivity

The visual sensitivity is determined by the susceptibility of the viewer and the value attributed to the view. Visual sensitivity is categorised as high, medium or low.

The Value of a View is defined by the presence of heritage assets, through planning designations (i.e. National Park) and whether it attracts visitors/tourists. Indications of value provided by guidebooks, tourist literature, provision of car parking and/or provision of interpretation materials.

Visual Susceptibility is defined by the occupation or activity of the people experiencing the views at particular locations and by the extent to which their attention or interest may be focused on the views.

Criterion used to categorise visual sensitivity (combination of value and susceptibility), are listed in Table A3 -Visual Sensitivity.

Table A3 - Visual value and susceptibility

SCALE	FACTORS INFLUENCING VALUE OF A VIEW	FACTORS INFLUENCING VISUAL SUSCEPTIBILITY
High	The view is valued at a national or regional level. The view is of high scenic quality, often protected by planning designations. It is a visitor destination, or heritage asset, where views of the surrounding are an important contributor to the experience. There are references to the view in literature or art, or the view appears in guidebooks or on tourist maps. It is a strategic location or viewpoint which may attract large number of viewers.	Communities or residents at home, where views contribute to the setting or visual amenity of the house or settlement. Travellers on recreational or scenic routes, (including public rights of way) where awareness of views is likely to be high. People who are engaged in outdoor recreation, whose attention or interest is likely to be focussed on the landscape, or on particular views.
Medium	The view is valued at a local level. It is mostly frequented by local people. The view is not publicised or signposted. It is reasonable attractive but otherwise unremarkable. There are some detracting features in the views.	Travellers on road, rail, or local paths for which views are not the primary focus, although they do contribute to the setting of the route.
Low	The view is not valued, or is of limited local value. The view is of low aesthetic quality and may detract from the surroundings. It is not a publicly accessible location.	People engaged in activity which does not involve or depend upon appreciation of views of the surrounding landscape. People at their place of work, whose attention may be focussed on their work or activity, not on their surroundings, and where the setting is not important to the quality of life.

Evaluating the magnitude of visual effect

The magnitude of visual effect is categorised as high, medium, low, or negligible which is in accordance with the guidance on the use of word scales that is provided in Paragraph

3.27 of GLVIA3. The magnitude of visual change takes into account possible changes in a receptor's view caused by the construction and/or operation of the development.

Criterion used to categorise the magnitude visual effect, are listed in Table A4 – Magnitude of Visual Effect.

Table A4 - Magnitude of Visual Effect

MAGNITUDE OF VISUAL EFFECT	KEY DETERMINING CRITERIA
High	Size and/or Scale: A major change or obstruction, appearing as a dominant or prominent feature. The proposal contrasts with the surrounding landscape in terms of mass, scale, form, colour and texture. The development rises over or is particularly noticeable against the skyline, it breaks uninterrupted horizon. Geographical Extent: The change is central and/or in the foreground. It is visible through the majority of the view. The viewpoint is located in proximity of the site. Duration and reversibility of effects: effects of the introduction of new features would be long-term i.e. will last for over 15 years or will be permanent. Visual loss of features that are irreplaceable or can only be replaced in the long-term.
Medium	Size and/or Scale: A moderate change or partial view of a new element within the view that may be readily noticed because partially screened. The development is partially incongruous in terms of mass, scale, form, colour and texture with the surrounding landscape. The proposal interferes with a portion of the skyline. Geographical Extent: The change is seen in front of the receptor as a noticeable feature in the middle ground or is obliquely visible. The viewpoint is located at some distance from the site. Duration and reversibility of effects: effects of the introduction of new features would be medium-term i.e. will last for between 5 and 15 years. Visual loss of elements that can be fully replaced within the same time period.
Low	Size and/or Scale: A low level of change, partially screened or only visible in glimpses. The proposal is not completely incongruous with surrounding context in terms of mass, scale, form, colour and texture. The development is not readily noticeable in the skyline. Geographical Extent: The change that may be obliquely viewed or appearing in the background landscape – this may include views that change rapidly from fast-moving road vehicles or trains. The change is noticeable through a small portion of the view. The viewpoint is located at a considerable distance from the site.

	Duration and reversibility of effects: effects of the introduction of new features would be short-term i.e. will last for between 1 and 5 years. Visual loss of elements that can be fully replaced within the same time period.
Negligible	Size and/or Scale: The proposal is largely screened. It blends with the surrounding landscape in terms of mass, scale, form, colour and texture so much to be unnoticeable and to consider the view unchanged. Geographical Extent: A small or intermittent change to the view that may be obliquely viewed and/or appearing in the distant background or viewed at high speed over short periods and capable of being missed by the casual observer. The viewpoint is located in the far distance from the site. Duration and reversibility of effects: Effect of the introduction of new elements would last for less than a year. Any visual loss of landscape elements can be fully replaced immediately.

Judging the significance of landscape and visual effects

The level of effects on a landscape or visual receptor is a function of the magnitude of the effect and the sensitivity of the receptor. The potential impacts identified here help inform the mitigation measures to be incorporated into the design.

Impacts, as the effects, can be beneficial or adverse, Table A2 and A4 sets out the significance of effects, which are described as **beneficial**, **neutral**, or **adverse**. These are largely professional value judgments drawn from the assessment process.

In landscape terms, **adverse** effects are the results of direct loss of essential elements that contribute to the characterisation of the site contexts, such loss affects negatively the integrity of the landscape character and designations. Instead, **beneficial** effects enhance the landscape character and contribute to the value of the site's context at various scale.

In visual terms, the effect is considered **adverse** if there is a loss of visual amenity or distinctive features/landmarks; visual competition that will diminish the visual value or appreciation of the existing assets is also considered negatively. On the other hand, should the proposal produce an enhancement or improvement of the visual amenity then the impact is considered **beneficial**.

A **neutral** effect would be the result of a development that does not alter in any way the baseline situation. This would certainly be the case of development that is not visible or have no landscape effects, therefore when the magnitude of change is considered none.

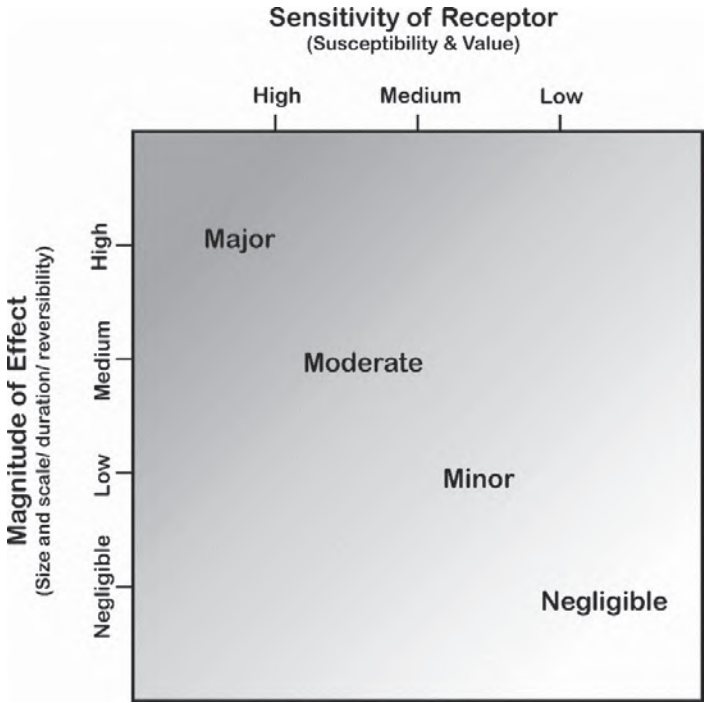
In line with GLVIA3, the assessment considers possible landscape and visual effects at three stages, which will be included as appropriate based on the case-by-case approach and consultation with the Local Authority:

- During demolition and construction;
- Opening Year (Year 1); and

- Following 15 years of occupation (Year 15).

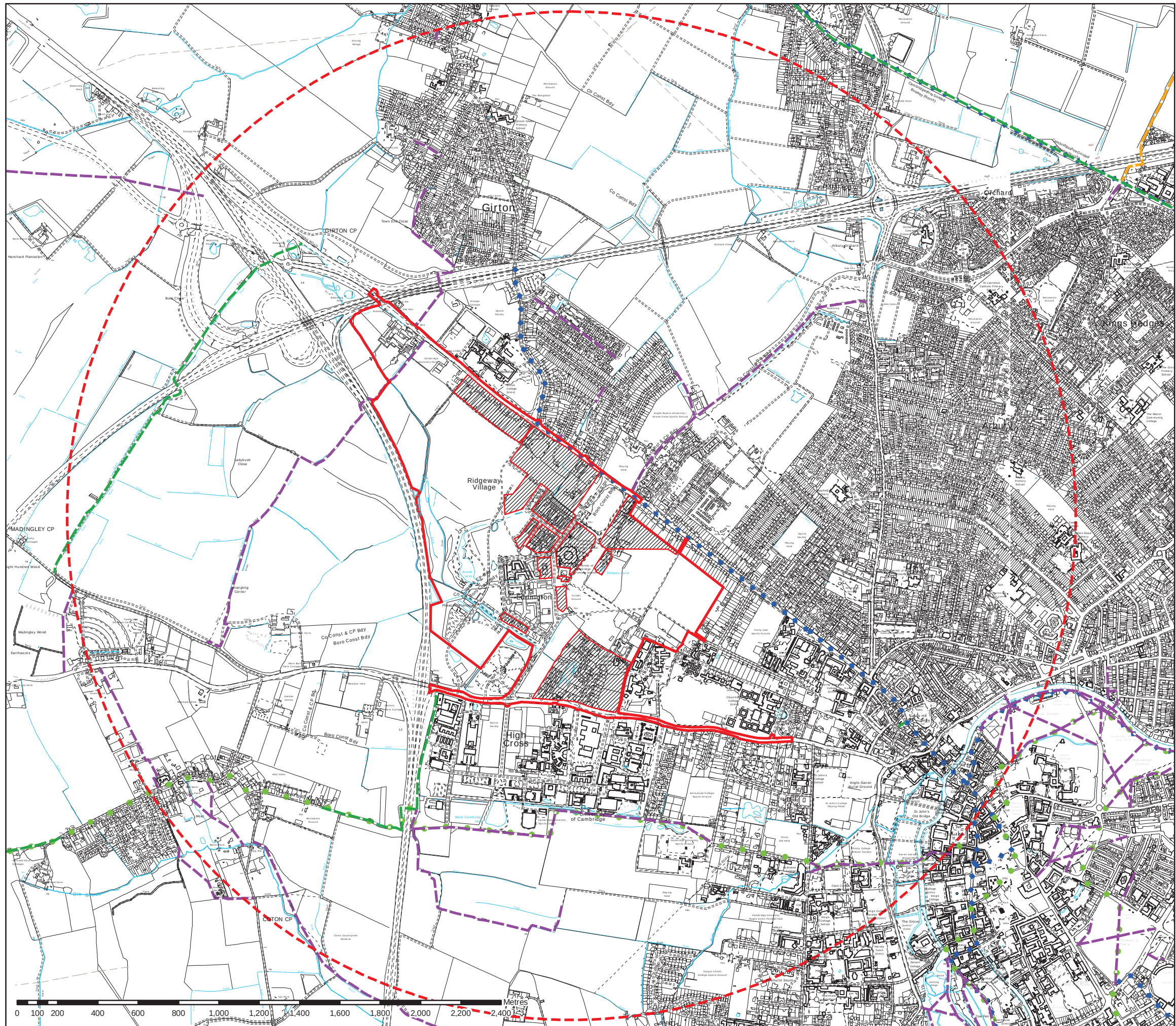
For the purpose of the Environmental Statement a 'Major' or 'Major/Moderate' (Table A5) level of effect (landscape or visual) is considered to be a 'Significant Effect'. In case of significant adverse effects, efforts will be made to appropriately design the proposal so that the significance of such effects will be prevented or avoided. If the significant adverse effects cannot be completely extinguished at Year 1 then all reasonable efforts should be made to mitigate the remaining townscape or visual effects at Year 15.

Table A5 –Level of landscape and visual effects.



APPENDIX 2

MAPPING



Northwest Cambridge

Map 01b - Public Rights of Way

Legend

-  Proposed Development Site
-  2.5km Radius
-  Exclusion Zones

-  Recreational Route
-  National Cycle Route

Pubic Rights of Way

-  Footpath
-  Bridleway
-  Byway

Drawing Number: B.18,474
Date: 28/08/2024
Scale: 1:19,000 @ A3
O.S. Ref: TL 4260



BIDWELLS



Northwest Cambridge

Map 02 - Aerial

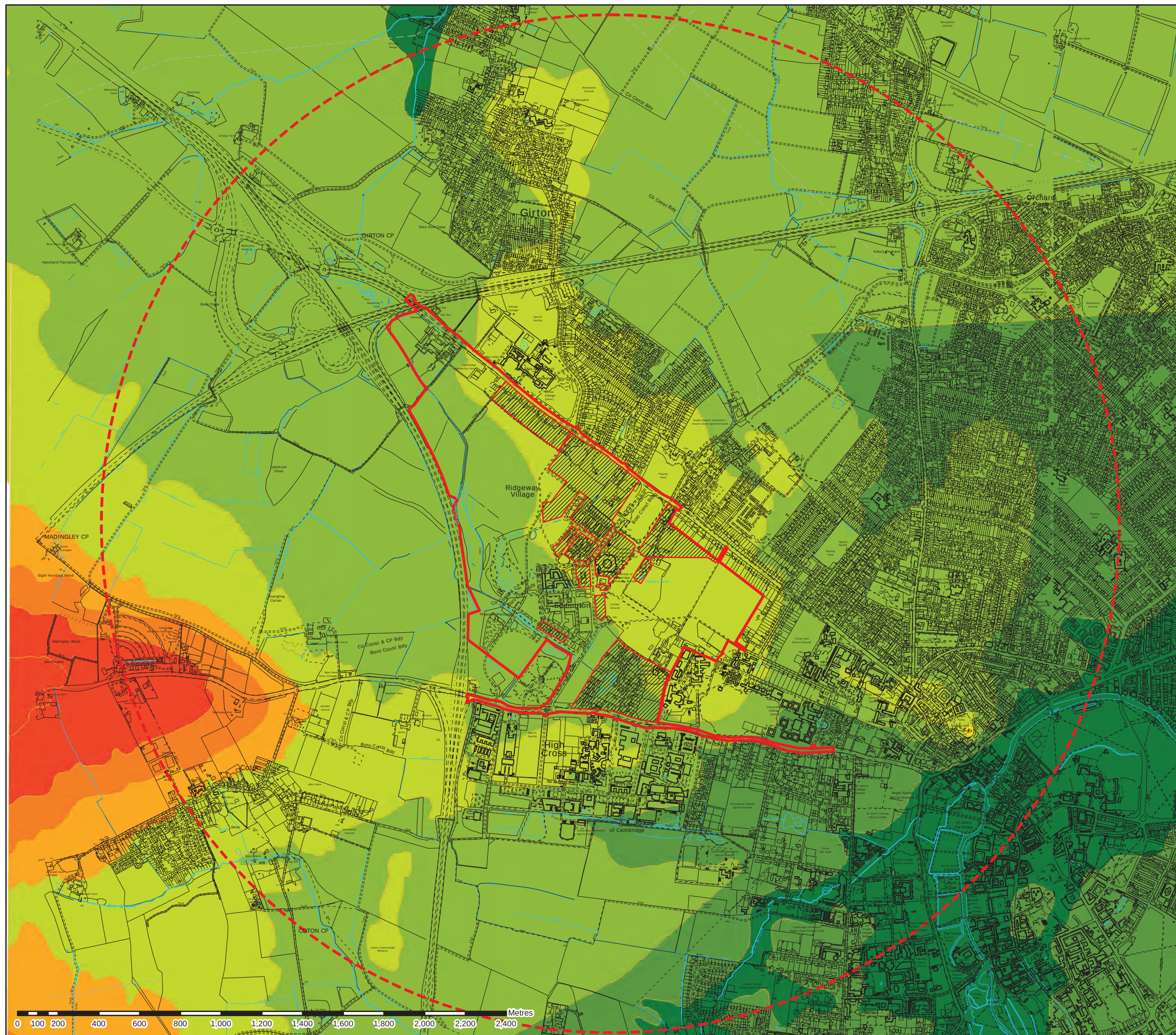
Legend

-  Proposed Development Site
-  2.5km Radius
-  Exclusion Zones

Drawing Number: B.18,474a
Date: 28/08/2024
Scale: 1:19,000 @ A3
O.S. Ref: TL 4260



BIDWELLS



Northwest Cambridge

Map 03 - Topography

Legend

-  Proposed Development Site
-  2.5km Radius
-  Exclusion Zones

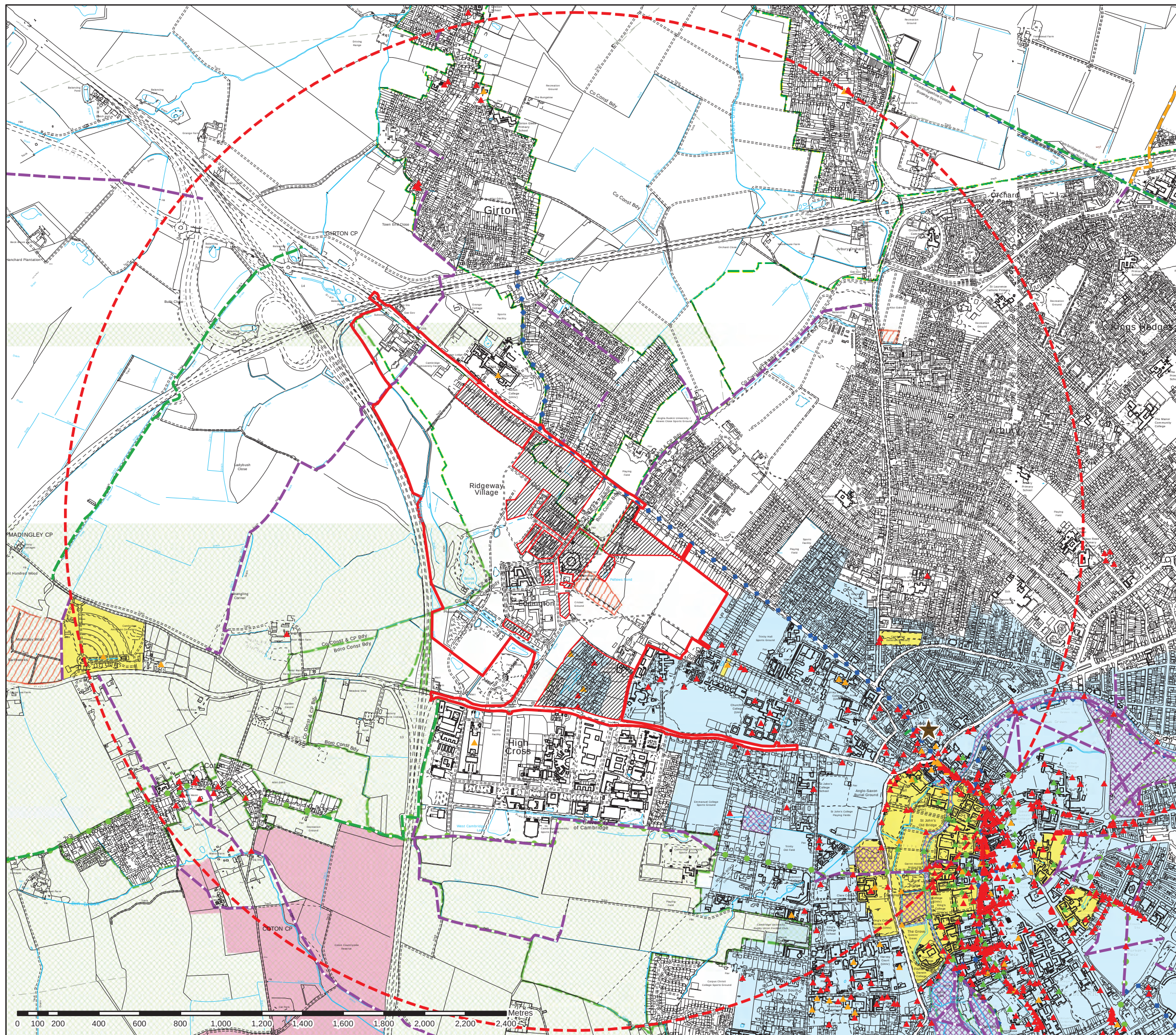
Elevation

-  5m - 10m
-  10m - 15m
-  15m - 20m
-  20m - 25m
-  25m - 30m
-  30m - 35m
-  30m - 40m
-  40m - 50m
-  50m - 60m

Drawing Number: B.18,474b
Date: 28/08/2024
Scale: 1:19,000 @ A3
O.S. Ref: TL 4260



BIDWELLS



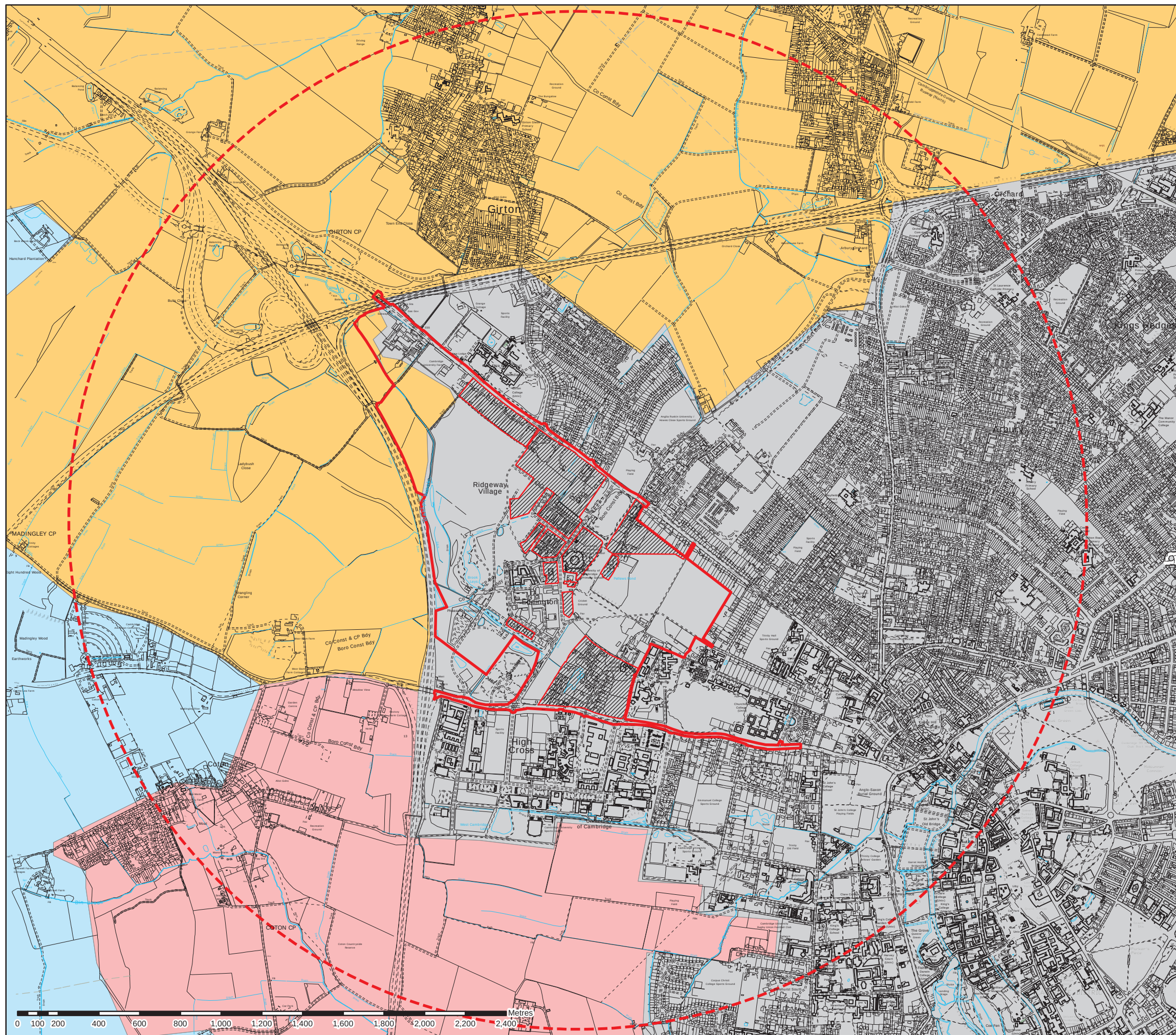
Northwest Cambridge

Map 04 - Designations

Legend

- Proposed Development Site
 - 2.5km Radius
 - Exclusion Zones
 - Scheduled Ancient Monuments
 - Grade I Listed Building
 - Grade II Listed Building
 - Grade II* Listed Building
 - Recreational Route
 - National Cycle Route
 - SSSI
 - County/City Wildlife Sites
 - Parks & Gardens
 - Green Belt
 - Conservation Area
 - Country Parks
- ### Pubic Rights of Way
- Footpath
 - Bridleway
 - Byway

Drawing Number: B.18,474c
Date: 28/08/2024
Scale: 1:19,000 @ A3
O.S. Ref: TL 4260



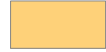
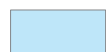
Northwest Cambridge

Map 04 - Landscape Character Regional

Legend

-  Proposed Development Site
-  2.5km Radius
-  Exclusion Zones

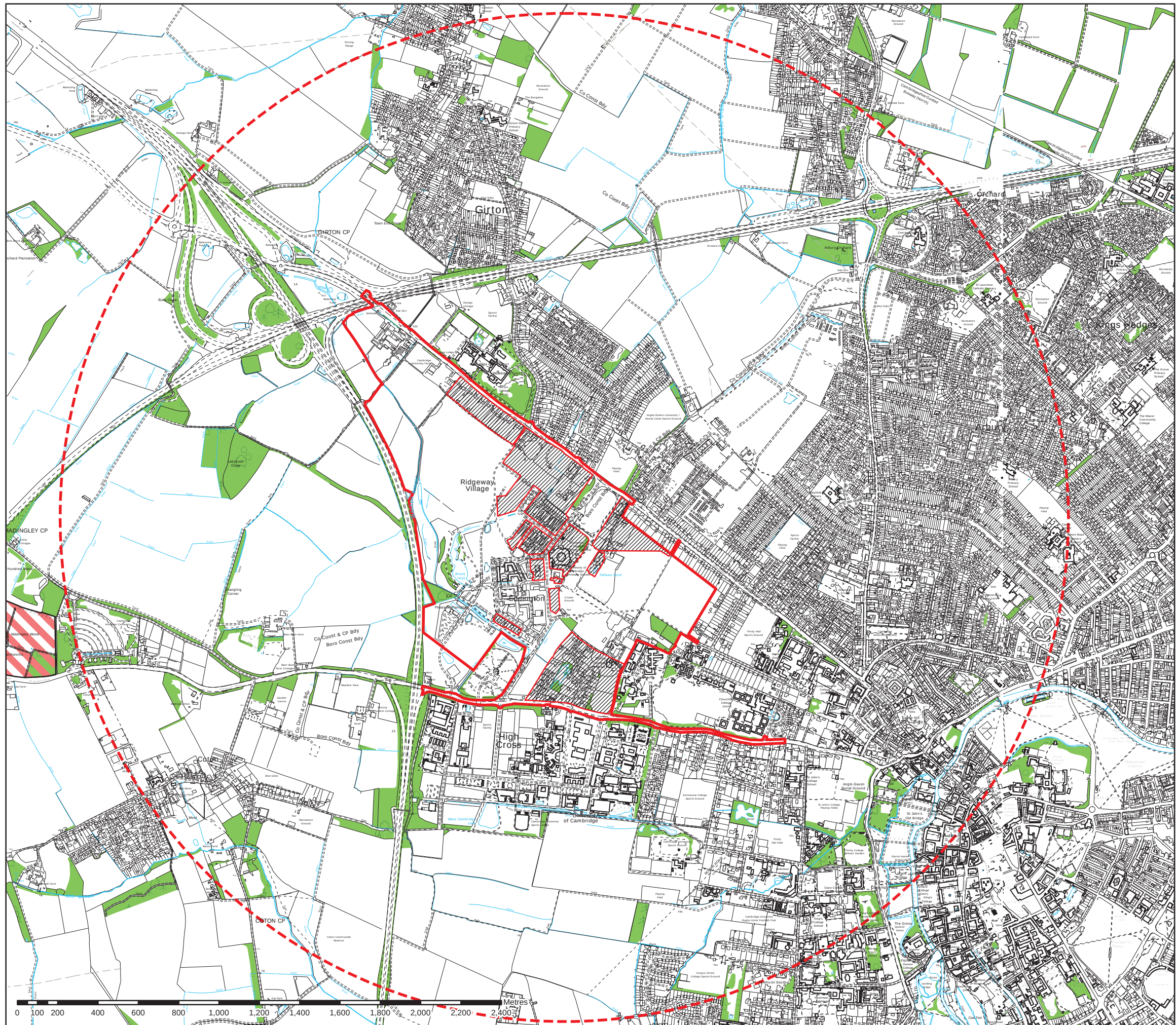
LCAs

-  2B - Cottenham Fen Edge Claylands
-  3B - BournTributaries Lowland Farmlands
-  4B - Lolworth to Longstowe Woodland Claylands
-  Cambridge Urban Area

Drawing Number: B.18,474d
Date: 28/08/2024
Scale: 1:19,000 @ A3
O.S. Ref: TL 4260



BIDWELLS



Northwest Cambridge

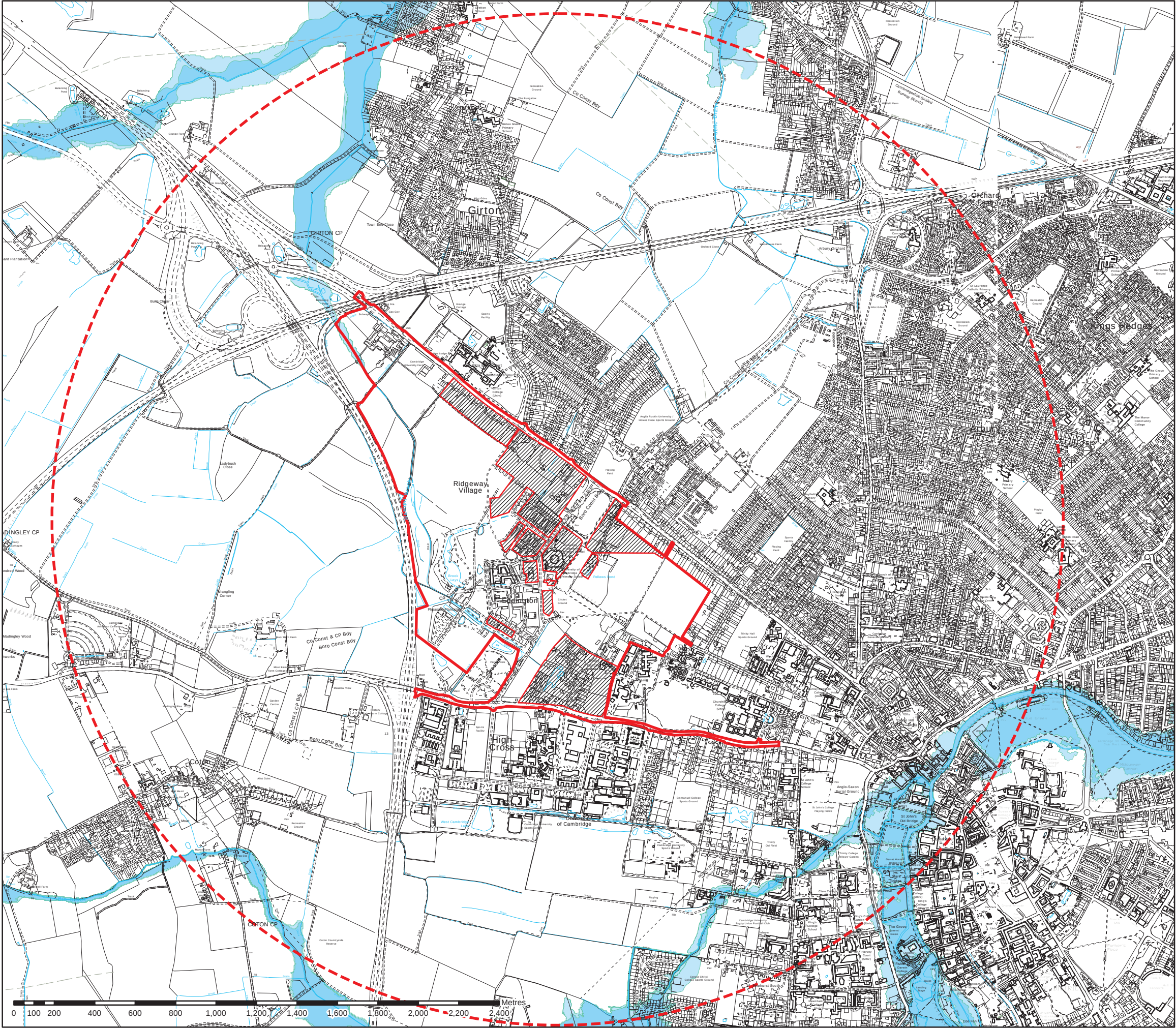
Map 08 - Significant Vegetation

Legend

-  Proposed Development Site
-  2.5km Radius
-  Exclusion Zones
-  Woodland Habitats
-  Ancient Woodlands

Drawing Number: B.18,474e
Date: 28/08/2024
Scale: 1:19,000 @ A3
O.S. Ref: TL 4260

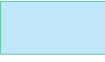




Northwest Cambridge

Map 09 - Flood Risk

Legend

-  Proposed Development Site
-  2.5km Radius
-  Exclusion Zones
-  Flood Zone 3
-  Flood Zone 2

Drawing Number: B.18,474f
Date: 28/08/2024
Scale: 1:19,000 @ A3
O.S. Ref: TL 4260





Northwest Cambridge

Map 10A - Historic 1886

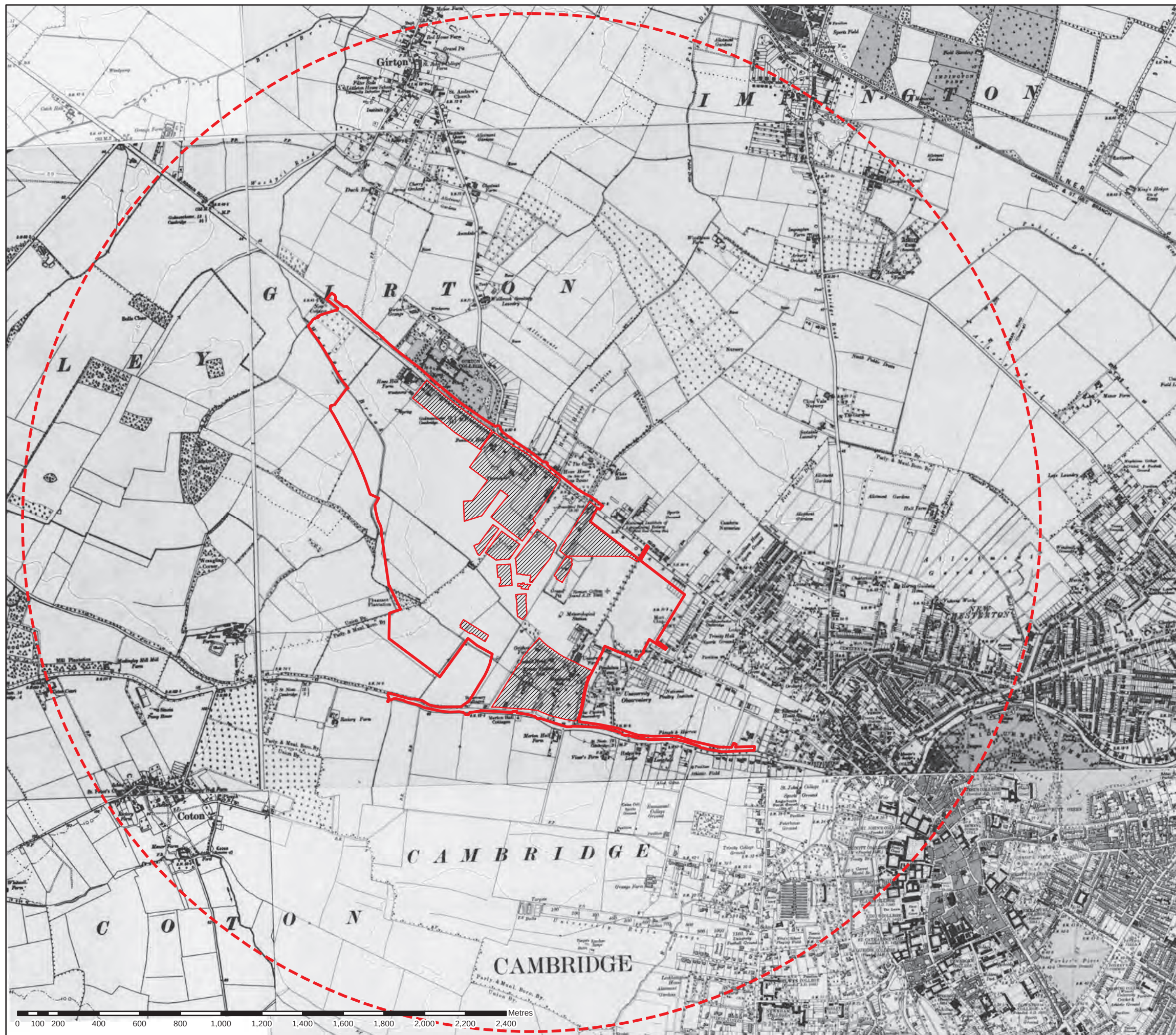
Legend

-  Proposed Development Site
-  2.5km Radius
-  Exclusion Zones

Drawing Number: B.18,474g
Date: 28/08/2024
Scale: 1:19,000 @ A3
O.S. Ref: TL 4260



BIDWELLS



Northwest Cambridge

Map 10B - Historic 1927

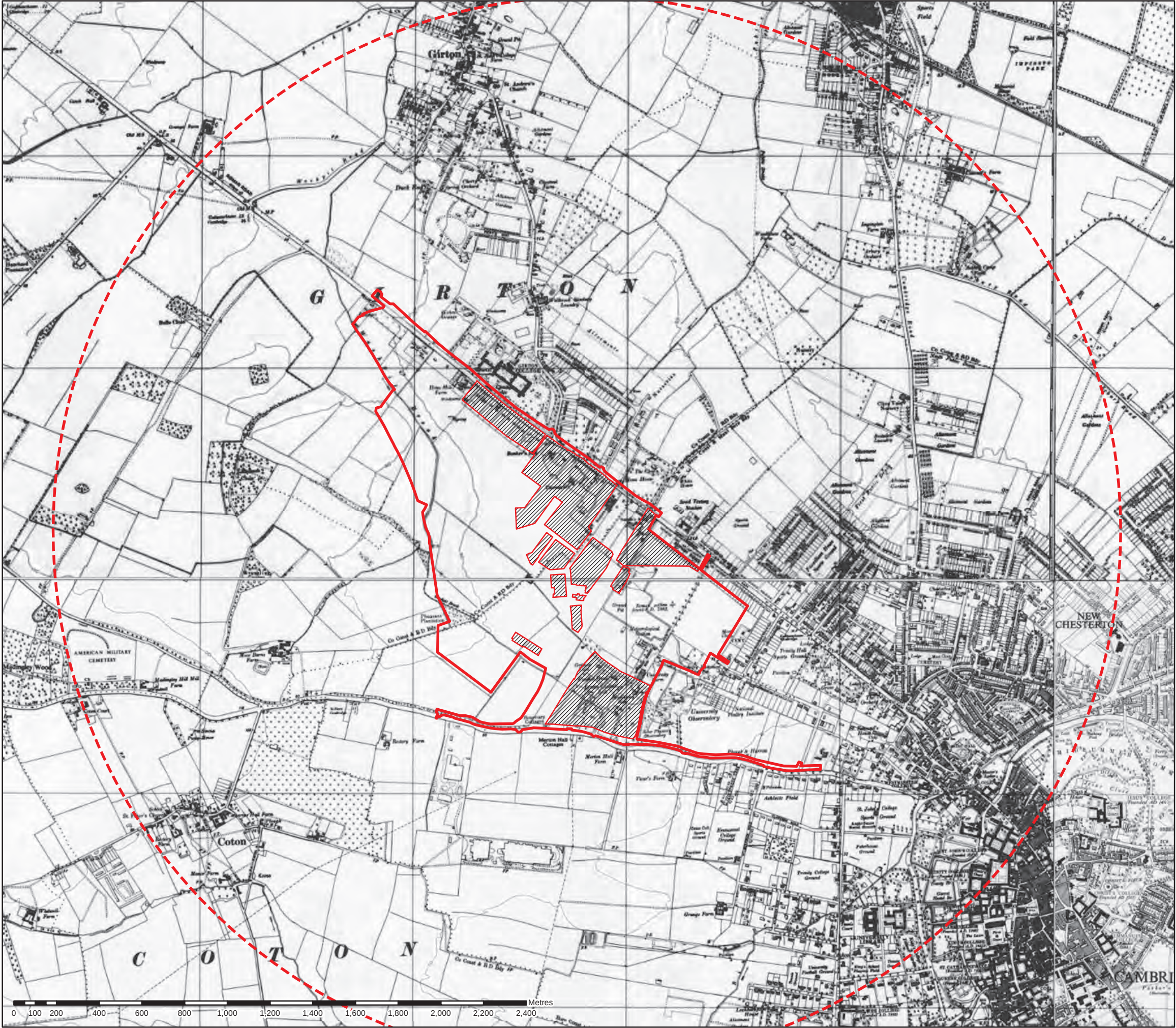
Legend

-  Proposed Development Site
-  2.5km Radius
-  Exclusion Zones

Drawing Number: B.18,474h
Date: 28/08/2024
Scale: 1:19,000 @ A3
O.S. Ref: TL 4260



BIDWELLS



Northwest Cambridge

Map 10C - Historic 1960s

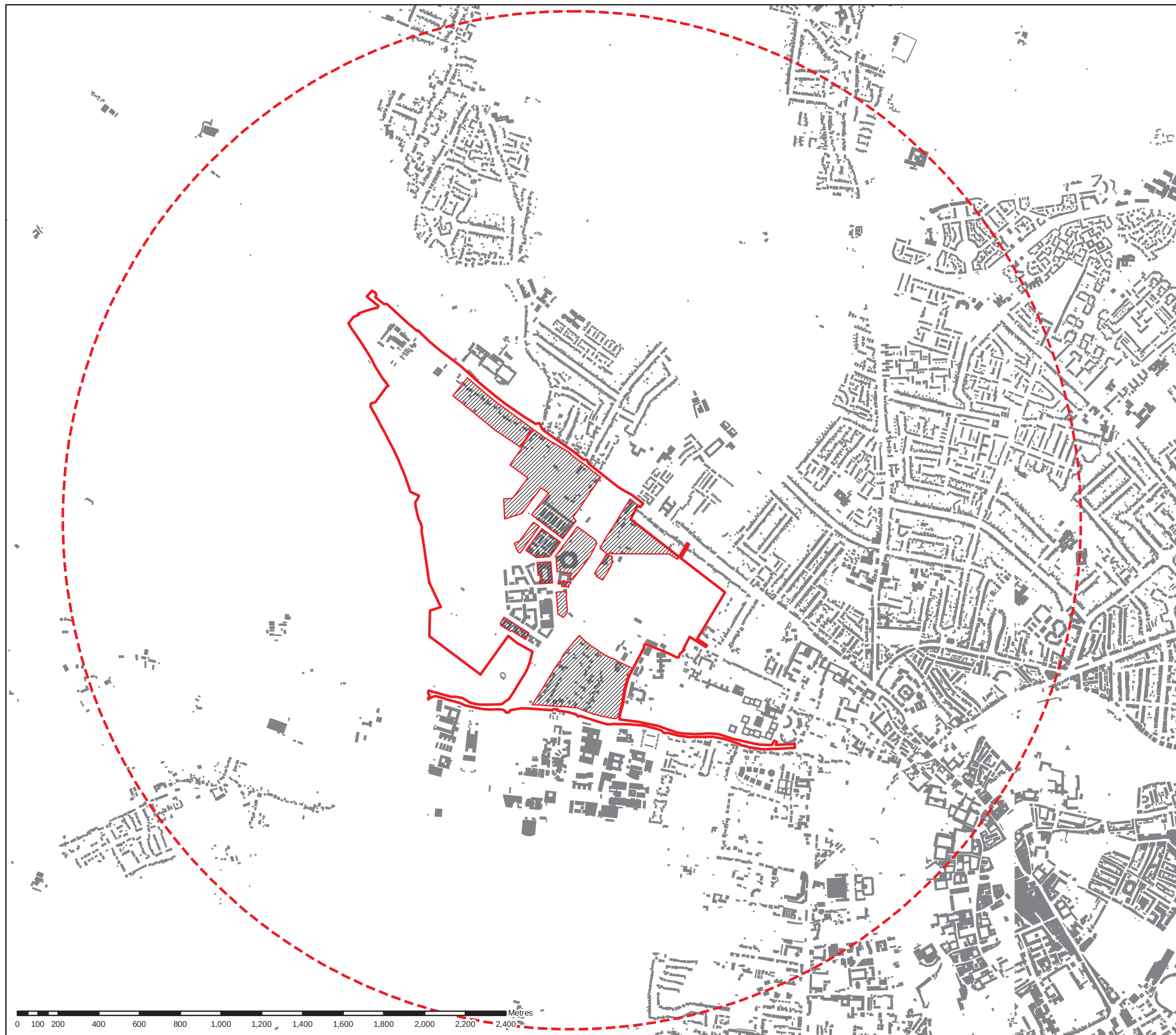
Legend

-  Proposed Development Site
-  2.5km Radius
-  Exclusion Zones

Drawing Number: B.18,474i
Date: 28/08/2024
Scale: 1:18,000 @ A3
O.S. Ref: TL 4260



BIDWELLS



Northwest Cambridge

Map 11 - Morphology

Legend

-  Proposed Development Site
-  2.5km Radius
-  Exclusion Zones

Drawing Number: B.18,474j
Date: 28/08/2024
Scale: 1:19,000 @ A3
O.S. Ref: TL 4260



BIDWELLS

APPENDIX 3

VIEWPOINTS





VIEWPOINT 1
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 2
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 3
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 4
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 5
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 6
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 7
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 8
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 9
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 10
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 11
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 12
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 13
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 14
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 15
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 16
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length



VIEWPOINT 17
Cylindrical Panorama - Printing size 820 x 250 mm @ A1 - Presented Field of View (H x V) 90° x 27° - To be viewed at comfortably arm's length

APPENDIX 4
AECOM VISUAL STUDY

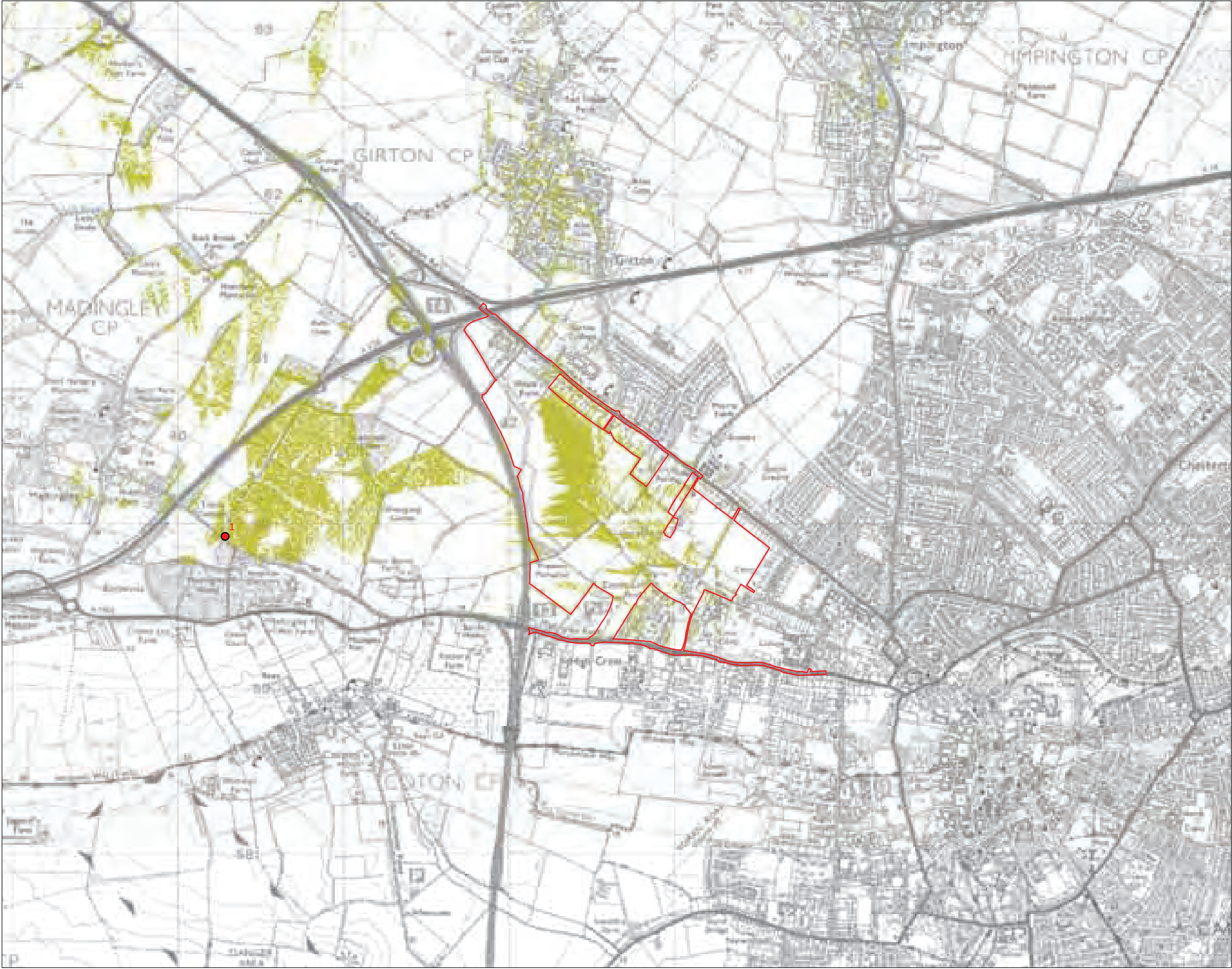


- KEY
- The Application Site Boundary
 - Proposed Development footprint
 - 2.5km Radius Study Area Boundary
 - Viewpoints

0 125 250 500 750 1,000 Meters



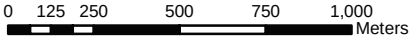
6.14	FIGURE
<i>Landscape & Visual Assessment</i> Viewpoint Location	TITLE
1:22,000 @ A3	SCALE
60199513_6.14	DWG. NO.



KEY

- The Application Site Boundary
- Viewpoints
- Theoretical visibility - Pre-proposed development
- Visible

Note: Theoretical visibility is calculated from the Digital Surface Model pre-proposed development. The resulting zones of theoretical visibility take into account the relative screening that existing buildings and features such as trees and vegetation provide.



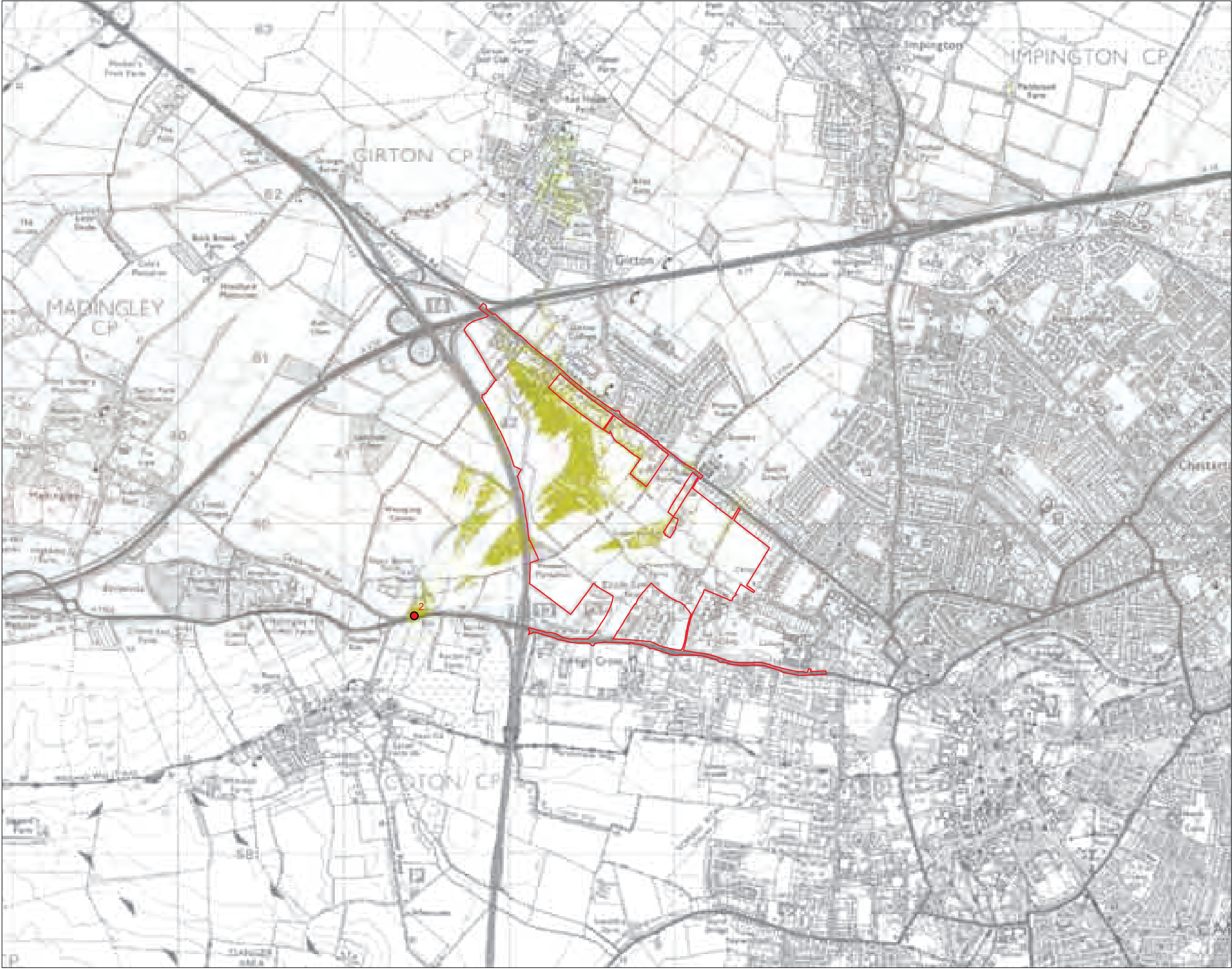
6.15
Landscape & Visual Assessment
Theoretical Surface Visibility from Viewpoint 1 - Pre-proposed development
1:22,000 @ A3
60199513_6.15

FIGURE
TITLE

SCALE

DWG. NO.





KEY

The Application Site Boundary

Viewpoints

Theoretical visibility - Pre-proposed development

Visible

Note: Theoretical visibility is calculated from the Digital Surface Model pre-proposed development. The resulting zones of theoretical visibility take into account the relative screening that existing buildings and features such as trees and vegetation provide.

0 125 250 500 750 1,000 Meters

AECOM



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6.16
Landscape &
Visual Assessment
Theoretical Surface Visibility
from Viewpoint 2 - Pre-
proposed development

FIGURE
TITLE

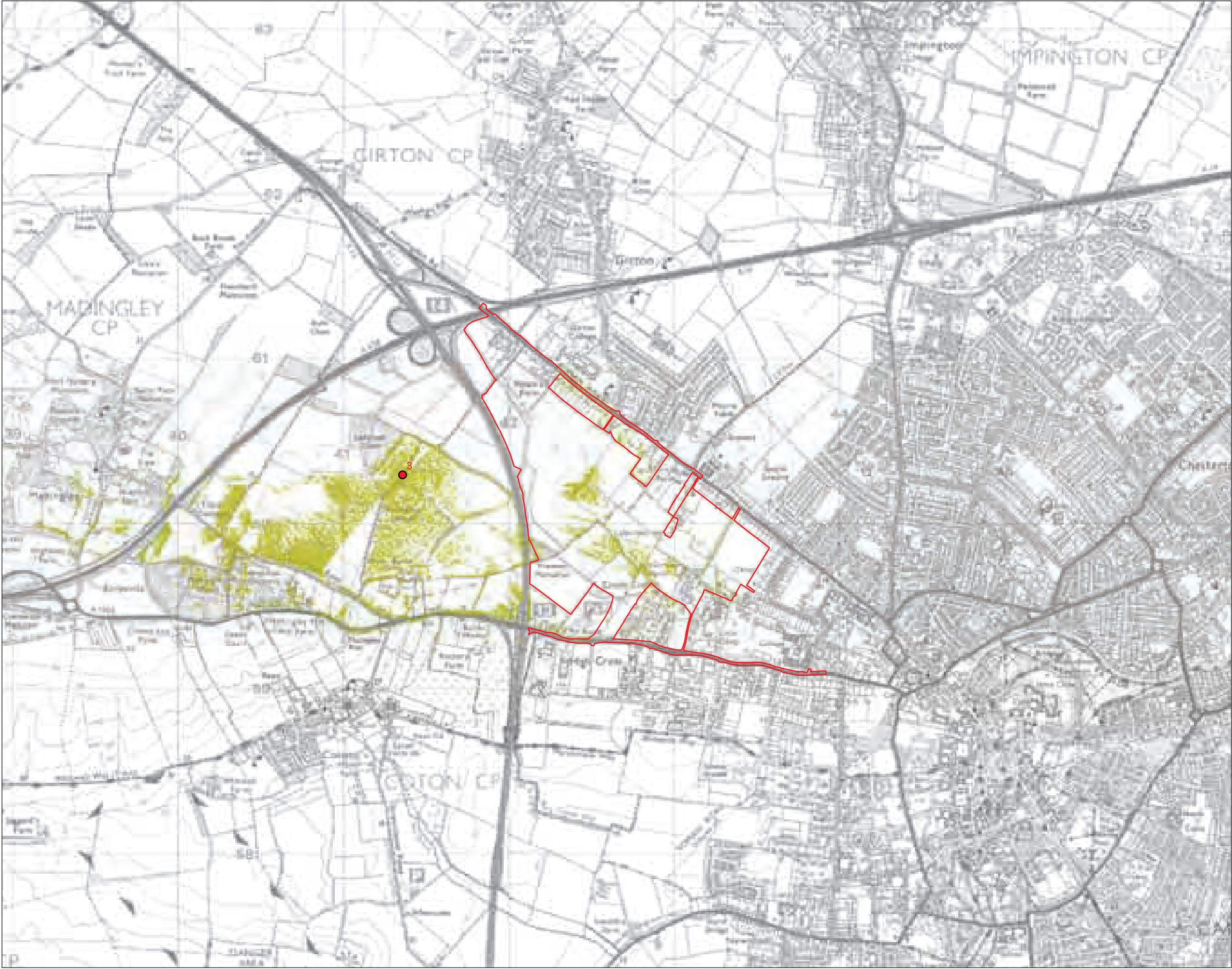
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SCALE

60199513_6.16

DWG. NO.





KEY

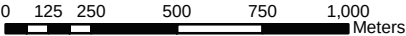
The Application Site Boundary

Viewpoints

Theoretical visibility - Pre-proposed development

Visible

Note: Theoretical visibility is calculated from the Digital Surface Model pre-proposed development. The resulting zones of theoretical visibility take into account the relative screening that existing buildings and features such as trees and vegetation provide.



AECOM



6.17
Landscape &
Visual Assessment
Theoretical Surface Visibility
from Viewpoint 3 - Pre-
proposed development

FIGURE
TITLE

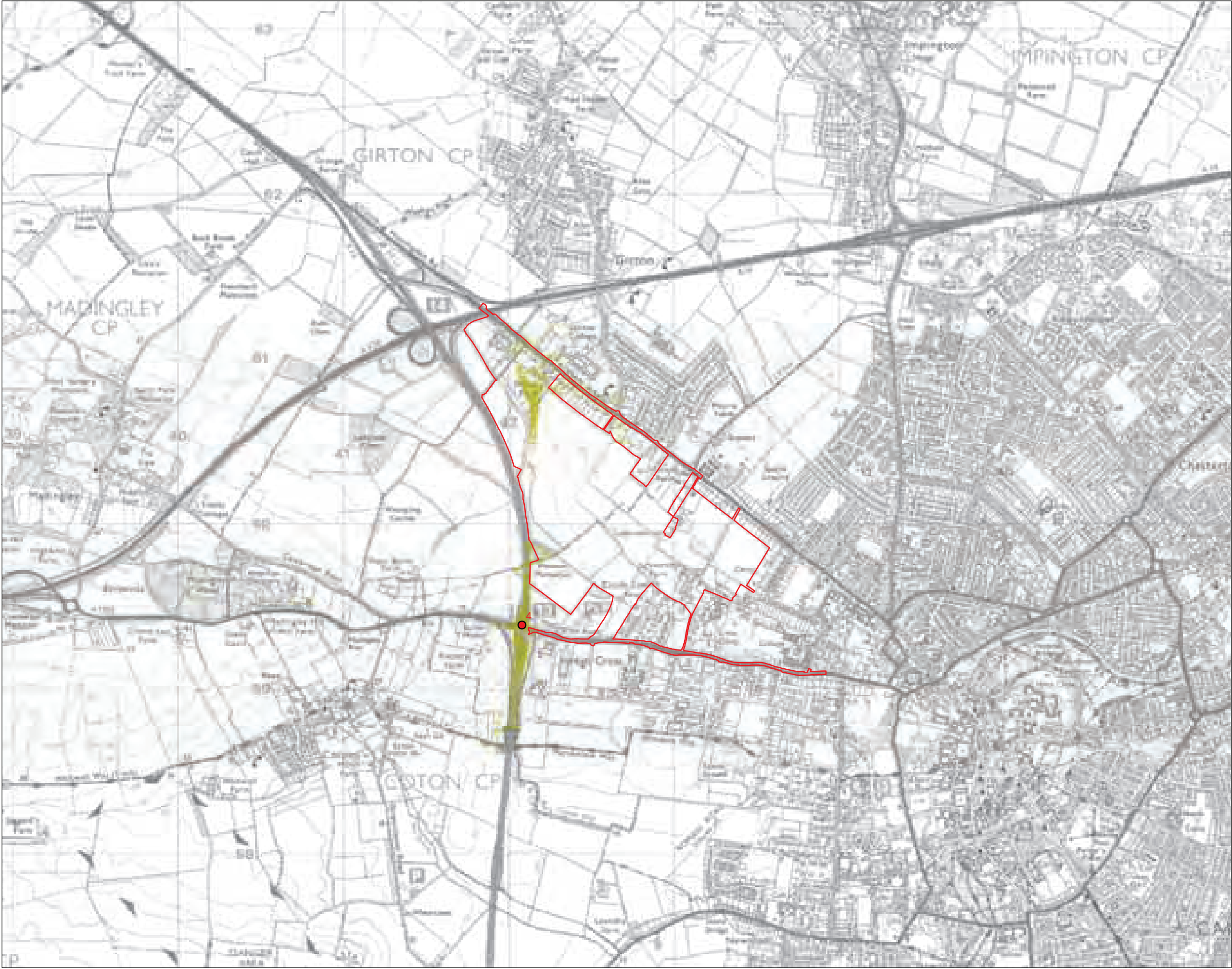
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SCALE

60199513_6.17

DWG. NO.





KEY

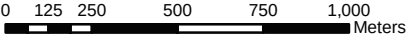
The Application Site Boundary

Viewpoints

Theoretical visibility - Pre-proposed development

Visible

Note: Theoretical visibility is calculated from the Digital Surface Model pre-proposed development. The resulting zones of theoretical visibility take into account the relative screening that existing buildings and features such as trees and vegetation provide.



6.18
*Landscape &
Visual Assessment*

Theoretical Surface Visibility
from Viewpoint 4 - Pre-
proposed development

1:22,000 @ A3

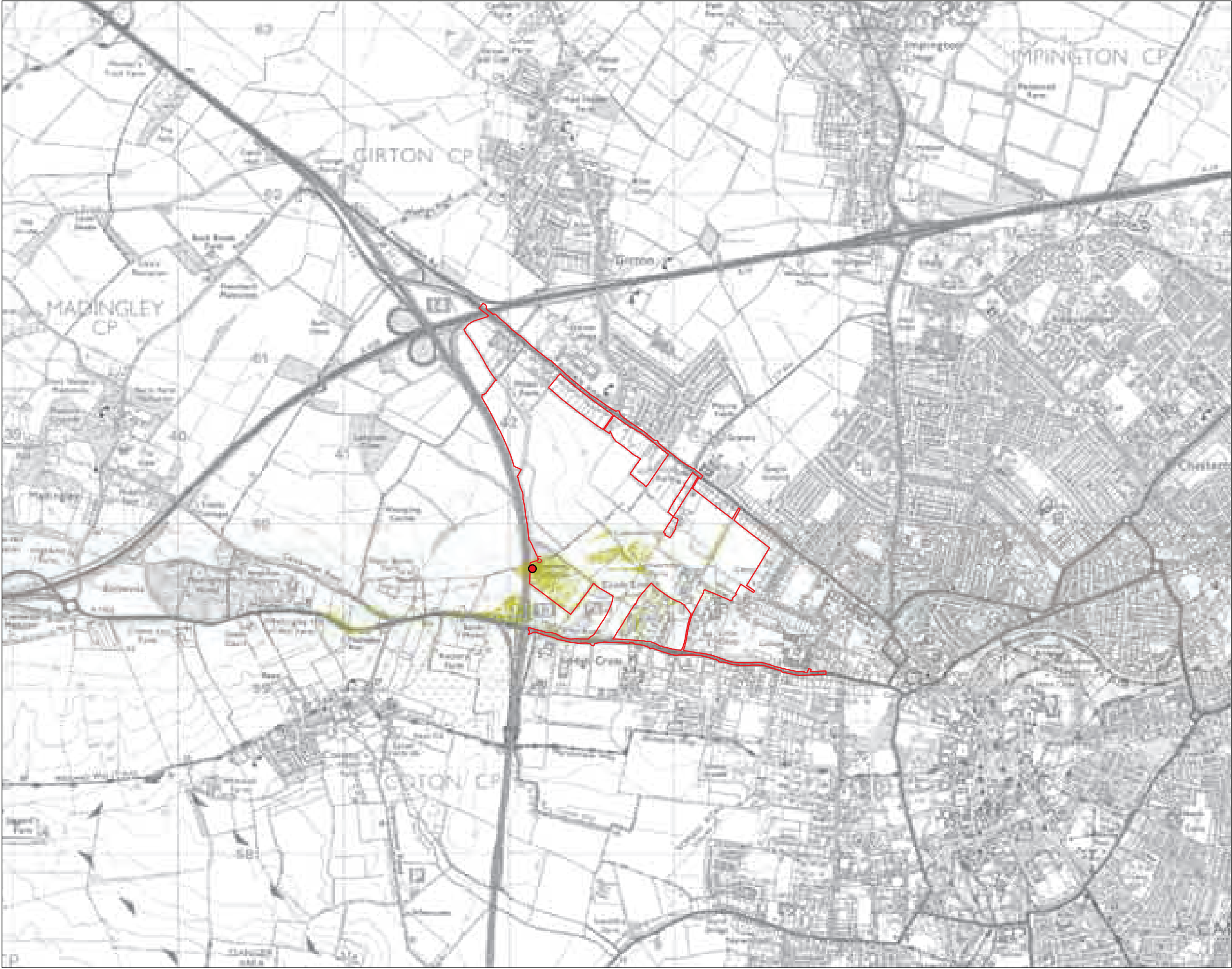
60199513_6.18

FIGURE
TITLE

SCALE

DWG. NO.





KEY

The Application Site Boundary

Viewpoints

Theoretical visibility - Pre-proposed development

Visible

Note: Theoretical visibility is calculated from the Digital Surface Model pre-proposed development. The resulting zones of theoretical vis bility take into account the relative screening that existing buildings and features such as trees and vegetation provide.

AECOM

6.19
Landscape &
Visual Assessment

Theoretical Surface Visibility
from Viewpoint 5 - Pre-
proposed development

1:22,000 @ A3

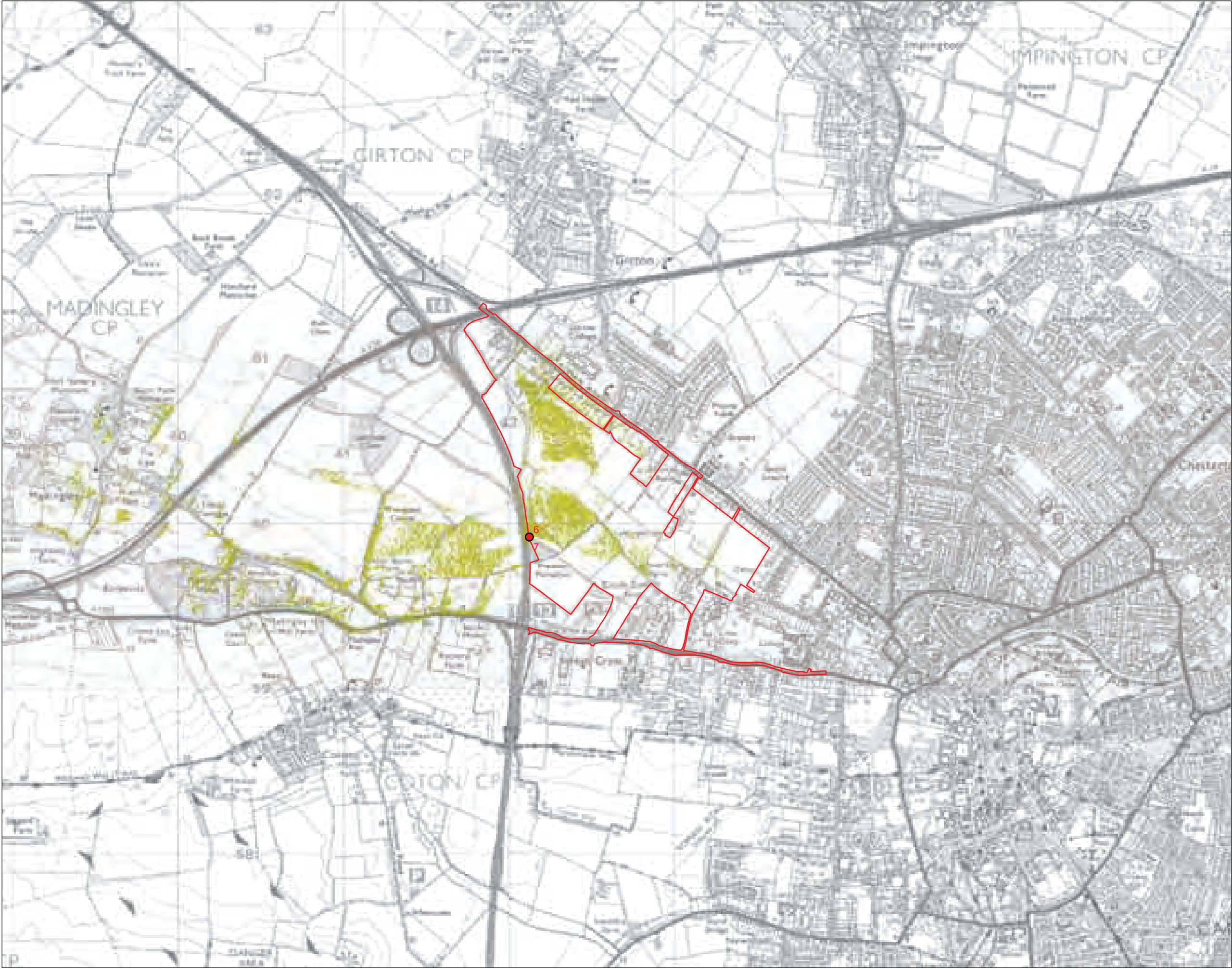
60199513_6.19

FIGURE
TITLE

SCALE

DWG. NO.

Information based on all known constraints.
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KEY

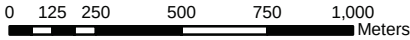
The Application Site Boundary

● Viewpoints

Theoretical visibility - Pre-proposed development

Visible

Note: Theoretical visibility is calculated from the Digital Surface Model pre-proposed development. The resulting zones of theoretical visibility take into account the relative screening that existing buildings and features such as trees and vegetation provide.



AECOM



6.20
*Landscape &
Visual Assessment*

Theoretical Surface Visibility
from Viewpoint 6 & 7 - Pre-
proposed development

1:22,000 @ A3

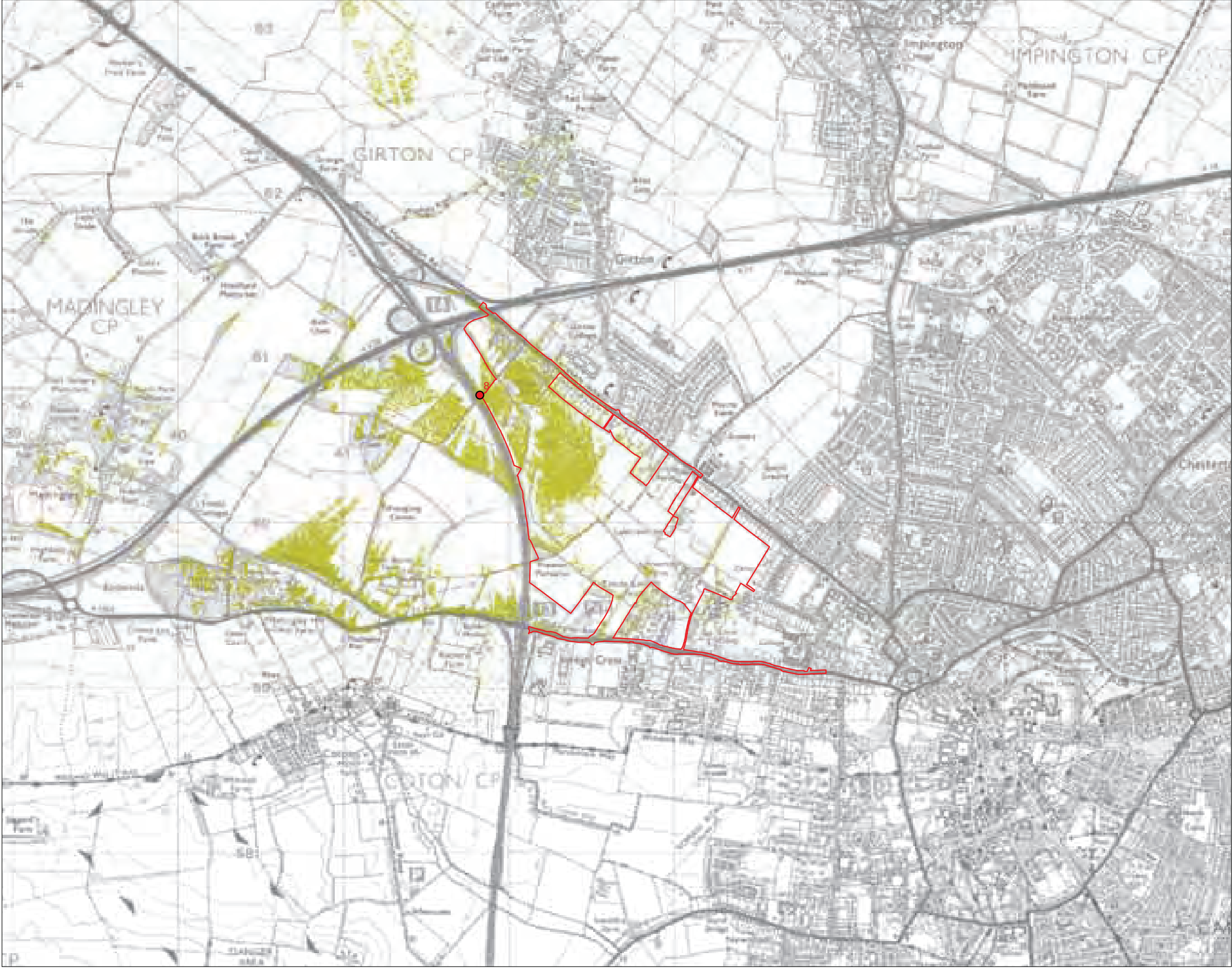
60199513_6.20

FIGURE
TITLE

SCALE

DWG. NO.

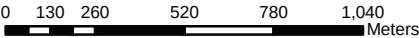




KEY

- The Application Site Boundary
- Viewpoints
- Theoretical visibility - Pre-proposed development
- Visible

Note: Theoretical visibility is calculated from the Digital Surface Model pre-proposed development. The resulting zones of theoretical visibility take into account the relative screening that existing buildings and features such as trees and vegetation provide.



6.21
*Landscape &
Visual Assessment*

Theoretical Surface Visibility
from Viewpoint 8 - Pre-
proposed development

1:22,000 @ A3

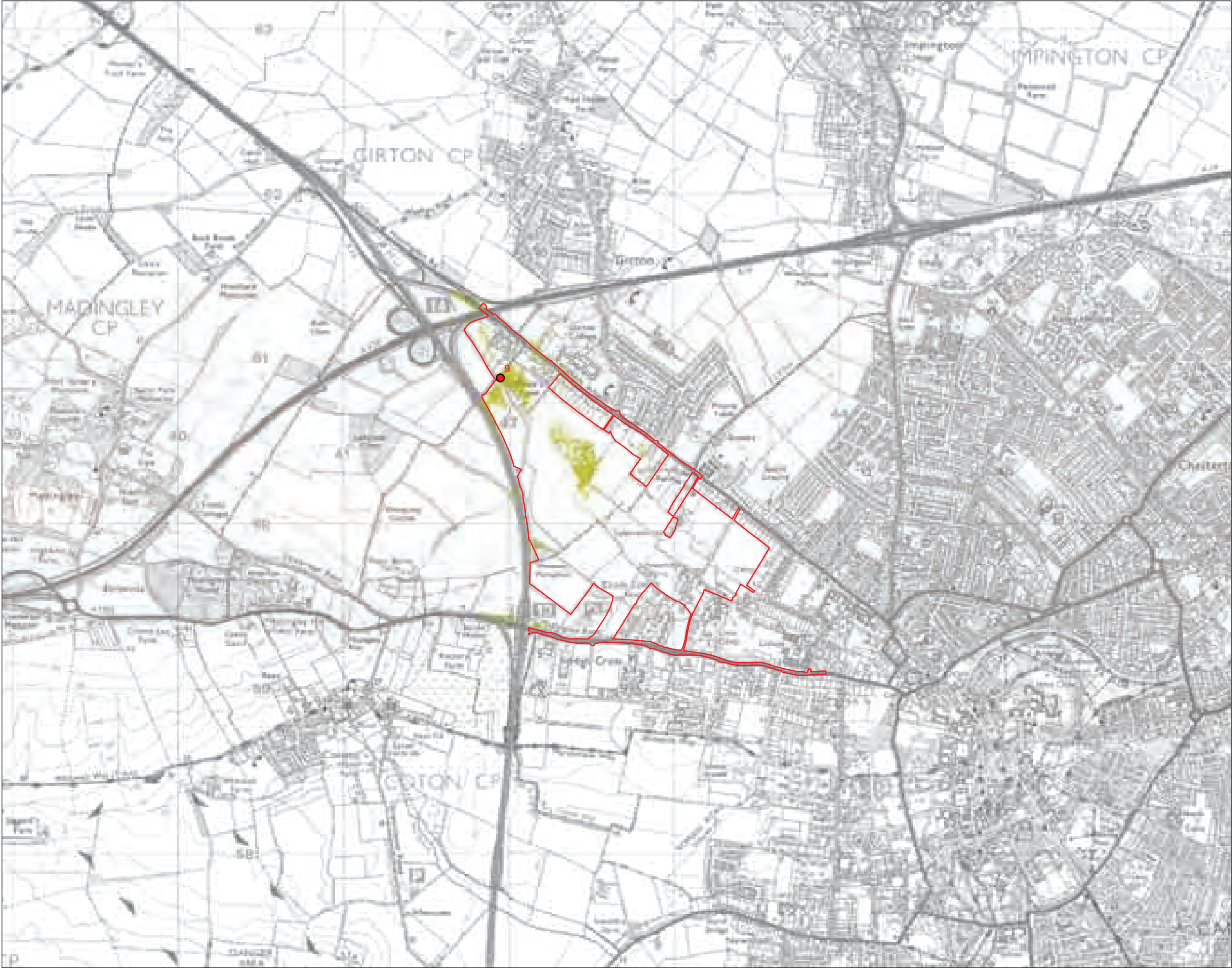
60199513_6.21

FIGURE
TITLE

SCALE

DWG. NO.





KEY

The Application Site Boundary

Viewpoints

Theoretical visibility - Pre-proposed development

Visible

Note: Theoretical visibility is calculated from the Digital Surface Model pre-proposed development. The resulting zones of theoretical vis bility take into account the relative screening that existing buildings and features such as trees and vegetation provide.

AECOM

6.22
Landscape &
Visual Assessment

Theoretical Surface Visibility
from Viewpoint 9 - Pre-
proposed development

1:22,000 @ A3

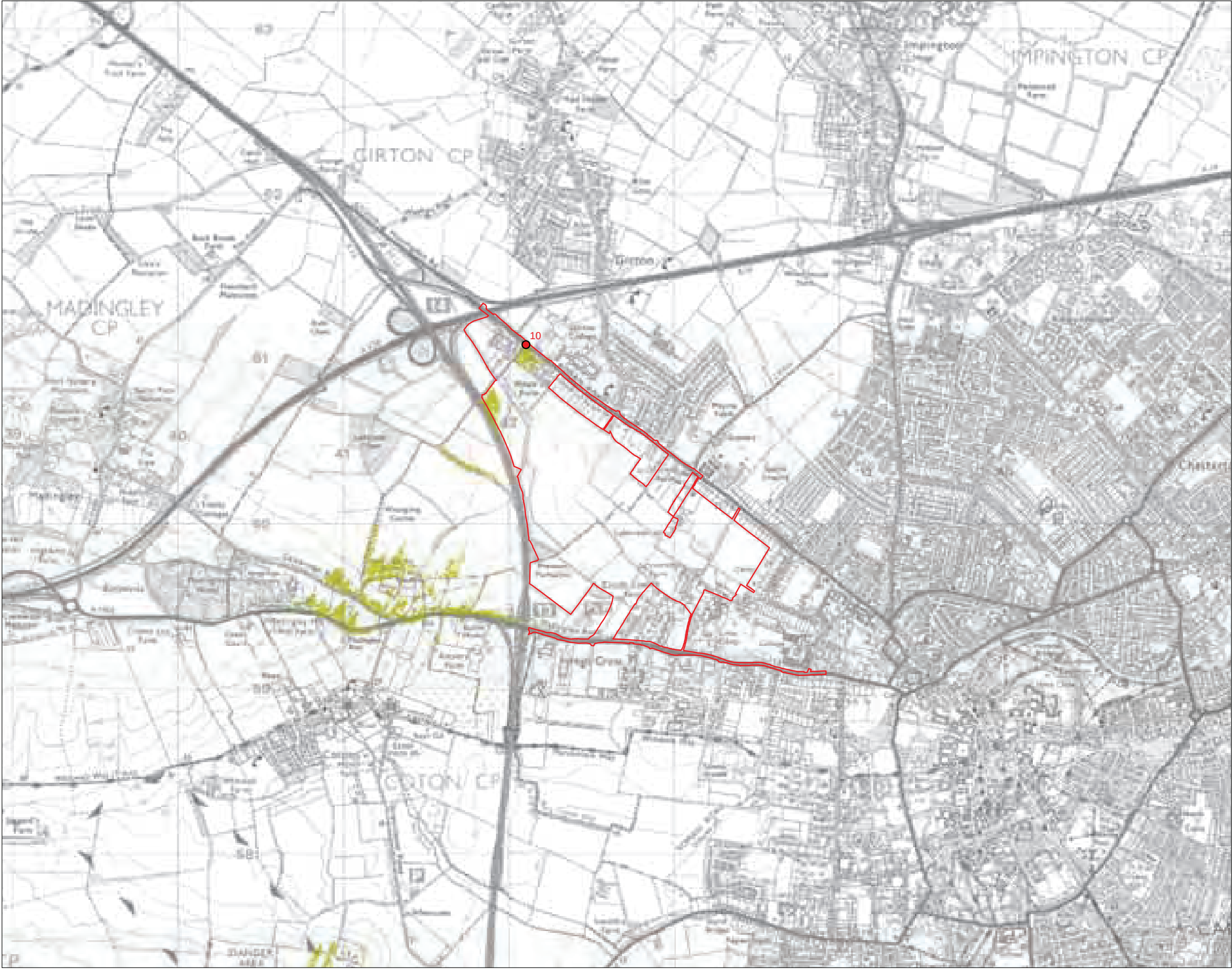
60199513_6.22

FIGURE
TITLE

SCALE

DWG. NO.

Information based on all known constraints.
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KEY

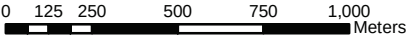
The Application Site Boundary

Viewpoints

Theoretical visibility - Pre-proposed development

Visible

Note: Theoretical visibility is calculated from the Digital Surface Model pre-proposed development. The resulting zones of theoretical visibility take into account the relative screening that existing buildings and features such as trees and vegetation provide.



AECOM



6.23
Landscape &
Visual Assessment

Theoretical Surface Visibility
from Viewpoint 10 - Pre-
proposed development

1:22,000 @ A3

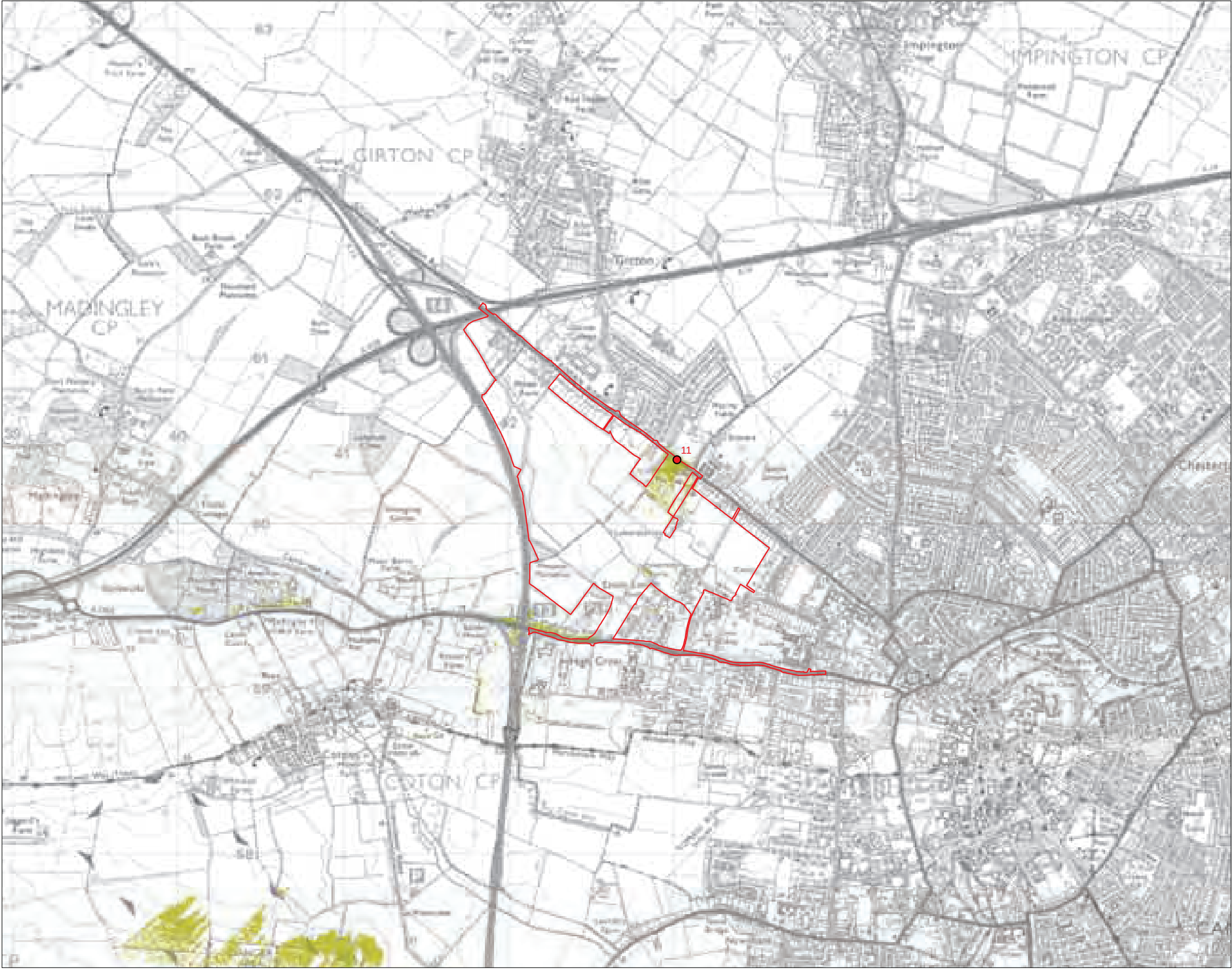
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FIGURE
TITLE

SCALE

DWG. NO.





KEY

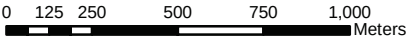
The Application Site Boundary

● Viewpoints

Theoretical visibility - Pre-proposed development

Visible

Note: Theoretical visibility is calculated from the Digital Surface Model pre-proposed development. The resulting zones of theoretical visibility take into account the relative screening that existing buildings and features such as trees and vegetation provide.



AECOM



6.24
*Landscape &
Visual Assessment*

Theoretical Surface Visibility
from Viewpoint 11 - Pre-
proposed development

1:22,000 @ A3

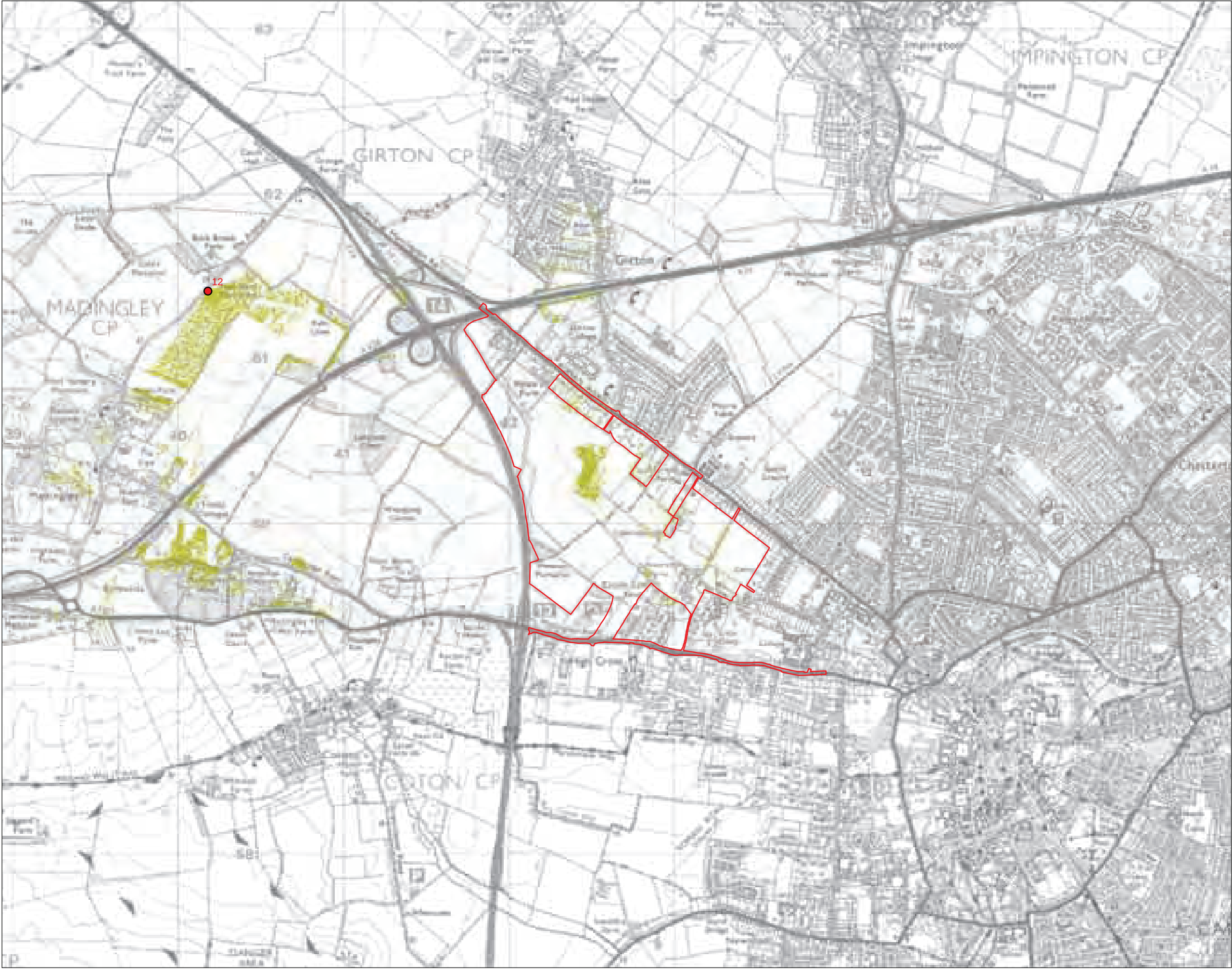
60199513_6.24

FIGURE
TITLE

SCALE

DWG. NO.





KEY

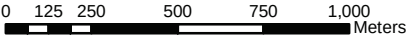
The Application Site Boundary

● Viewpoints

Theoretical visibility - Pre-proposed development

Visible

Note: Theoretical visibility is calculated from the Digital Surface Model pre-proposed development. The resulting zones of theoretical visibility take into account the relative screening that existing buildings and features such as trees and vegetation provide.



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CAMBRIDGE**

6.25
*Landscape &
Visual Assessment*

**FIGURE
TITLE**

Theoretical Surface Visibility
from Viewpoint 12 - Pre-
proposed development

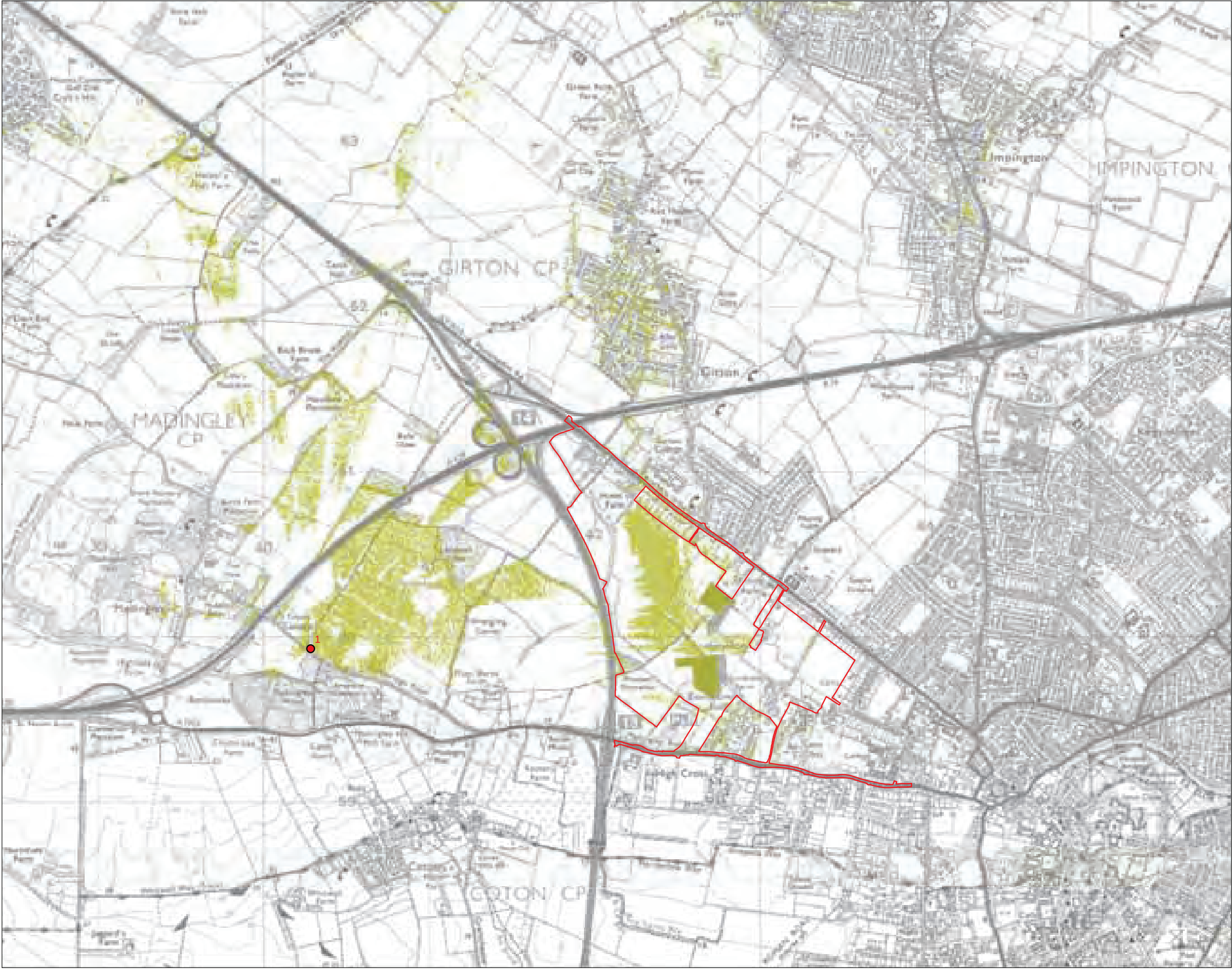
1:22,000 @ A3

SCALE

60199513_6.25

DWG. NO.





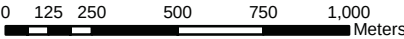
KEY

- The Application Site Boundary
- Viewpoints

Theoretical visibility - 2014

- Visible
- Parameter Envelopes
- Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



6.26	FIGURE
<i>Landscape & Visual Assessment</i>	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 1 - 2014	
1:22,000 @ A3	SCALE
60199513_6.26	DWG. NO.



KEY

The Application Site Boundary

Viewpoints

Theoretical visibility - 2014

Visible

Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.

6.27	FIGURE
Landscape & Visual Assessment	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 2 - 2014	
1:22,000 @ A3	SCALE
60199513_6.27	DWG. NO.

Information based on all known constraints.

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KEY

The Application Site Boundary

Viewpoints

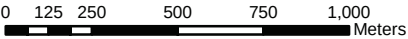
Theoretical visibility - 2014

Visible

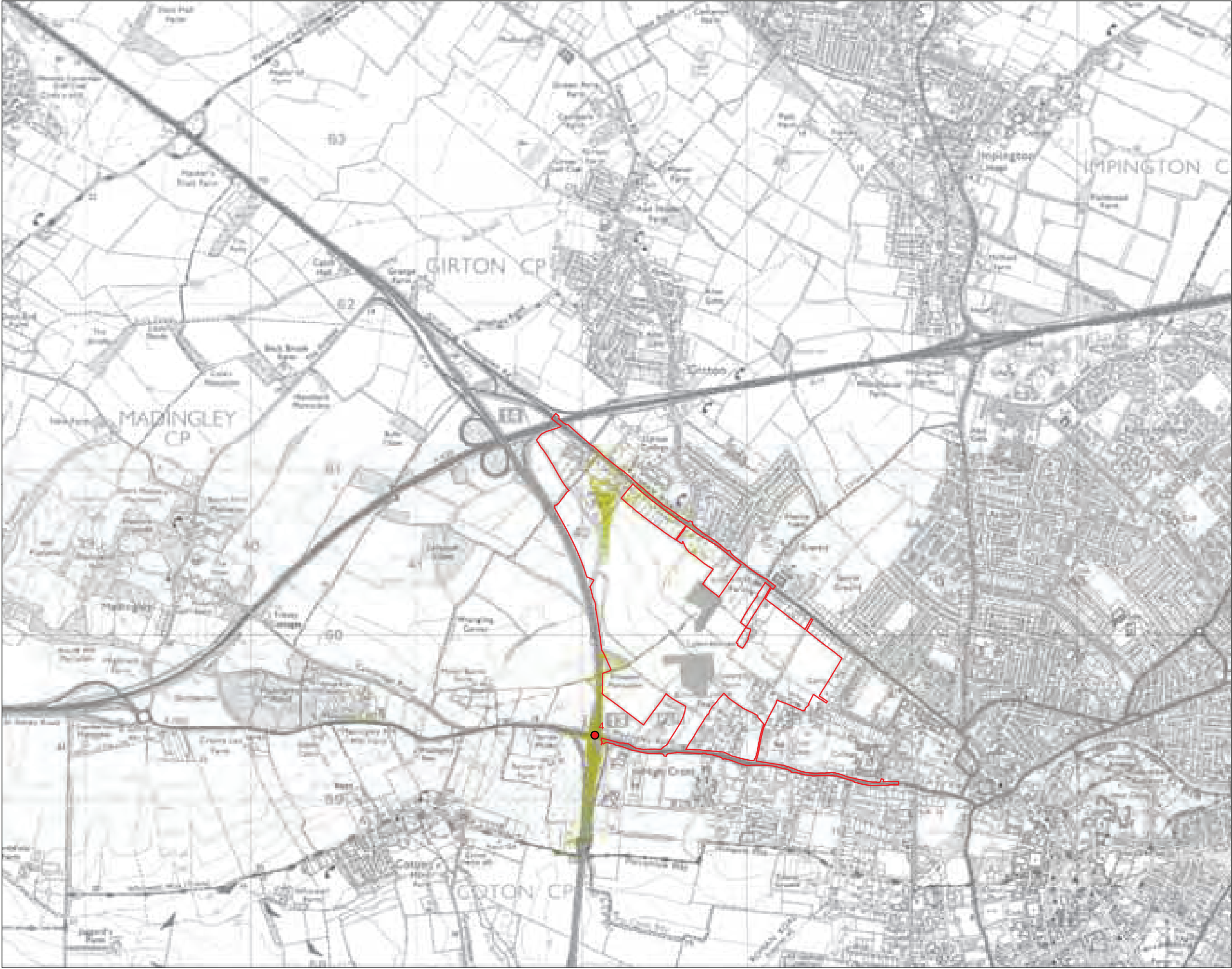
Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



6.28	FIGURE
Landscape & Visual Assessment	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 3 - 2014	
1:22,000 @ A3	SCALE
60199513_6.28	DWG. NO.



KEY

The Application Site Boundary

Viewpoints

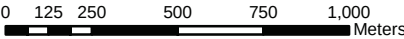
Theoretical visibility - 2014

Visible

Parameter Envelopes

Parameter Envelope Visibility

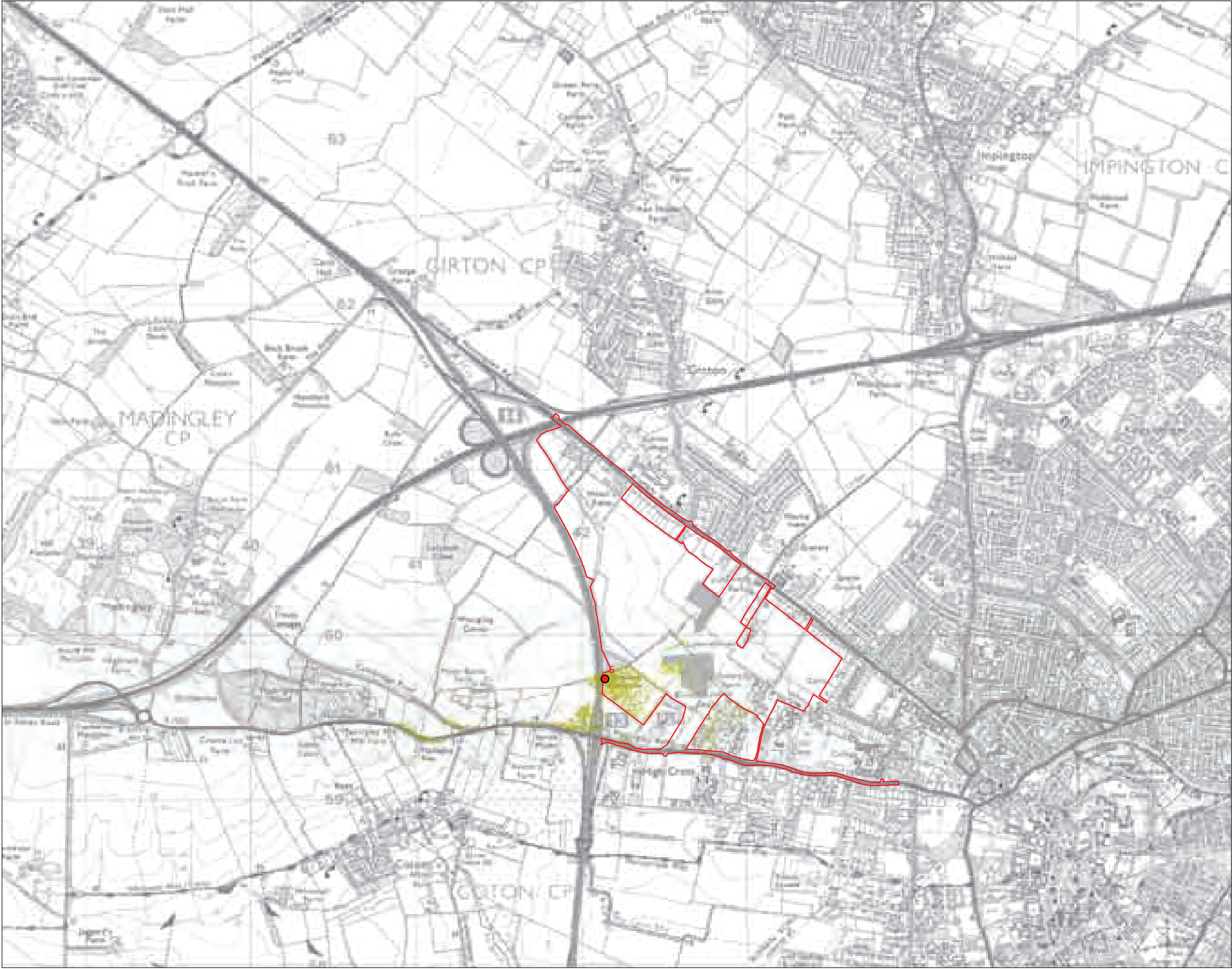
Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



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6.29	FIGURE
Landscape & Visual Assessment	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 4 - 2014	
1:22,000 @ A3	SCALE
60199513_6.29	DWG. NO.



KEY

The Application Site Boundary

Viewpoints

Theoretical visibility - 2014

Visible

Parameter Envelopes

Parameter Envelope Visibility

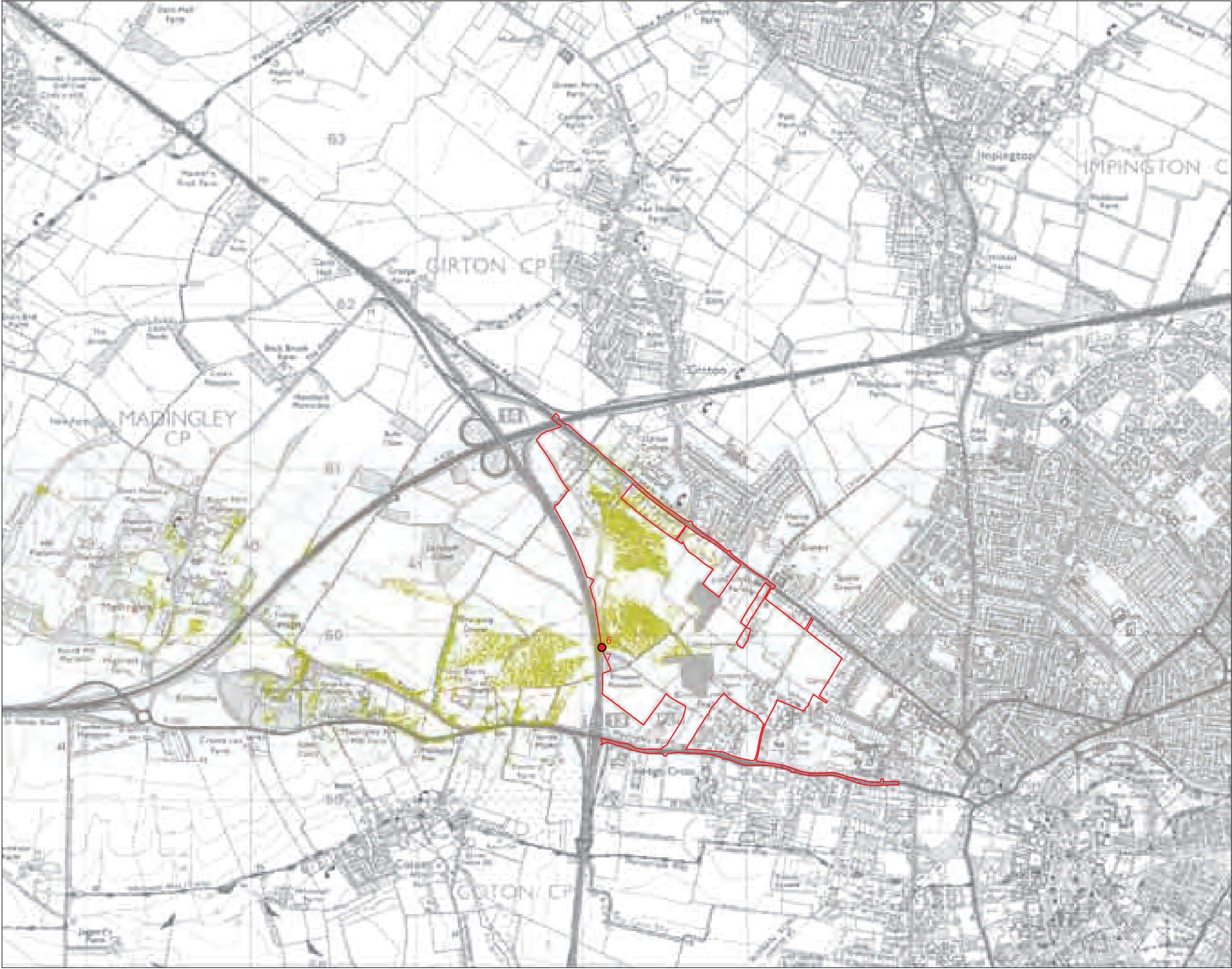
Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.

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6.30	FIGURE
Landscape & Visual Assessment	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 5 - 2014	
1:22,000 @ A3	SCALE
60199513_6.30	DWG. NO.

Information based on all known constraints.

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KEY

The Application Site Boundary

Viewpoints

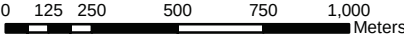
Theoretical visibility - 2014

Visible

Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



6.31

Landscape &
Visual Assessment

Theoretical Building
Block Visibility

Viewpoint No. 6 & 7 - 2014

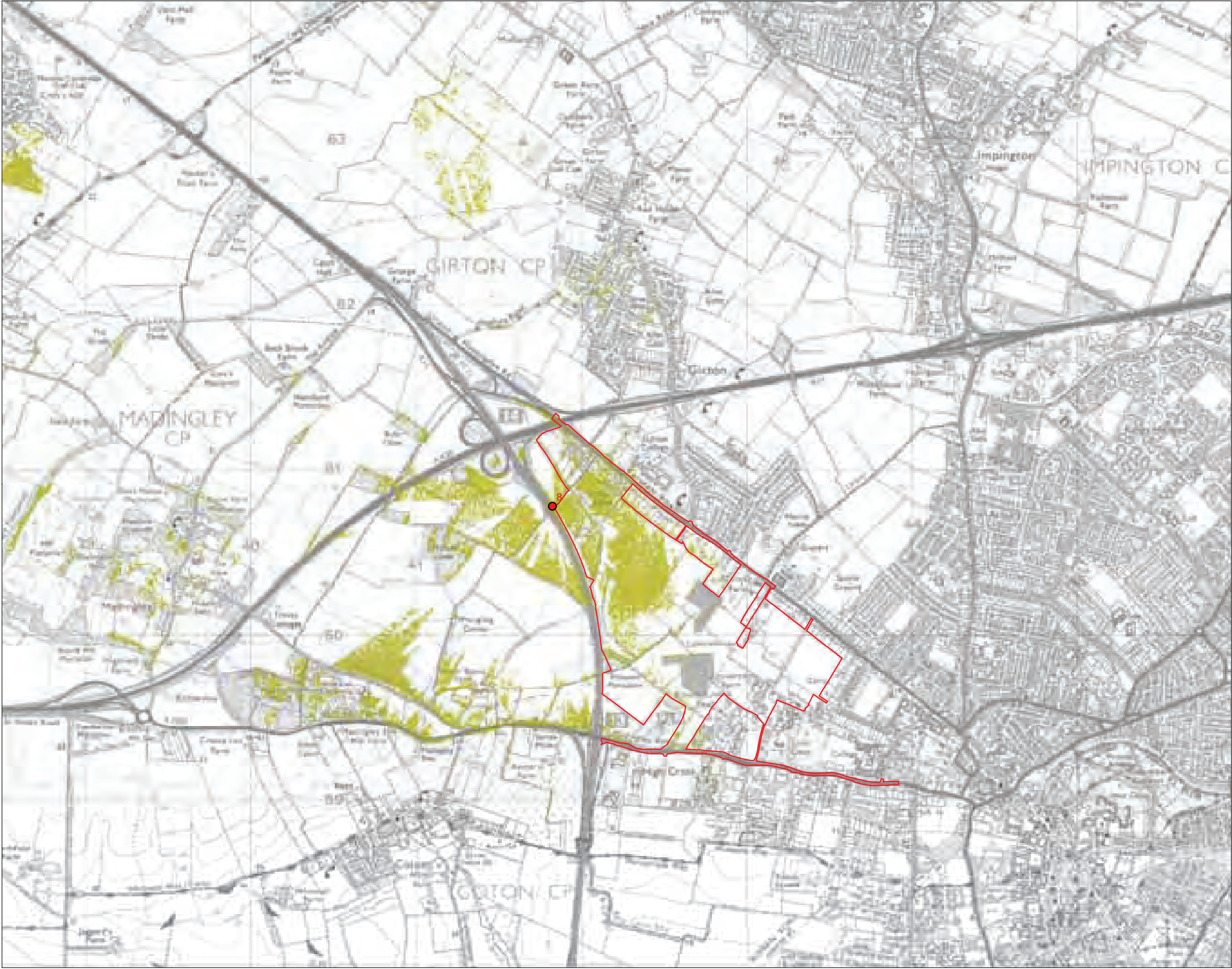
1:22,000 @ A3

60199513_6.31

FIGURE
TITLE

SCALE

DWG. NO.



KEY

The Application Site Boundary

Viewpoints

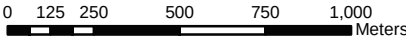
Theoretical visibility - 2014

Visible

Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.

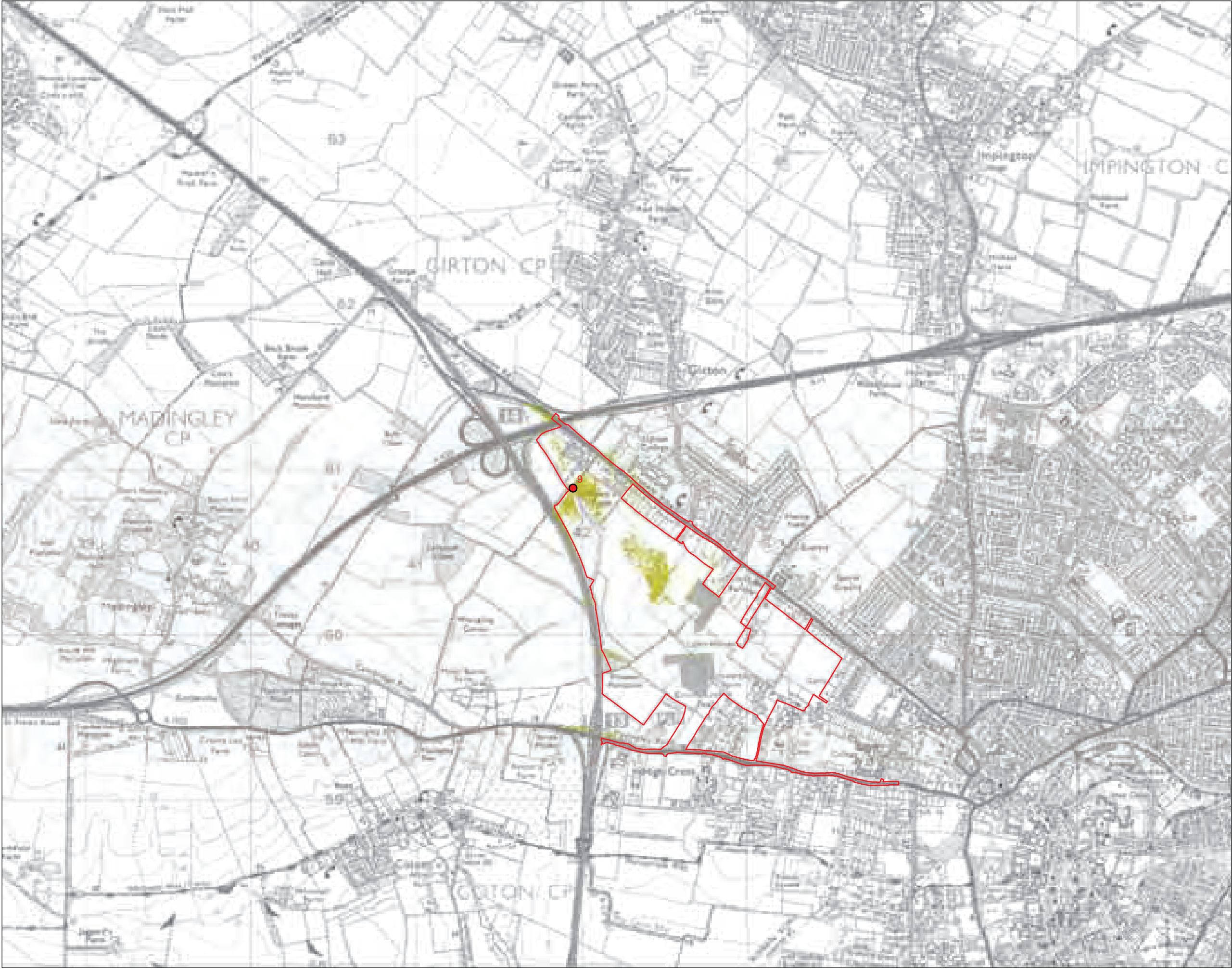


6.32
*Landscape &
Visual Assessment*
Theoretical Building
Block Visibility
Viewpoint No. 8 - 2014
1:22,000 @ A3
60199513_6.32

FIGURE
TITLE

SCALE

DWG. NO.



KEY

The Application Site Boundary

Viewpoints

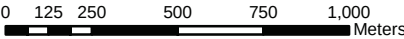
Theoretical visibility - 2014

Visible

Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



6.33

Landscape & Visual Assessment

Theoretical Building Block Visibility

Viewpoint No. 9 - 2014

1:22,000 @ A3

60199513_6.33

FIGURE TITLE

SCALE

DWG. NO.



KEY

The Application Site Boundary

Viewpoints

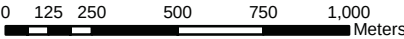
Theoretical visibility - 2014

Visible

Parameter Envelopes

Parameter Envelope Visibility

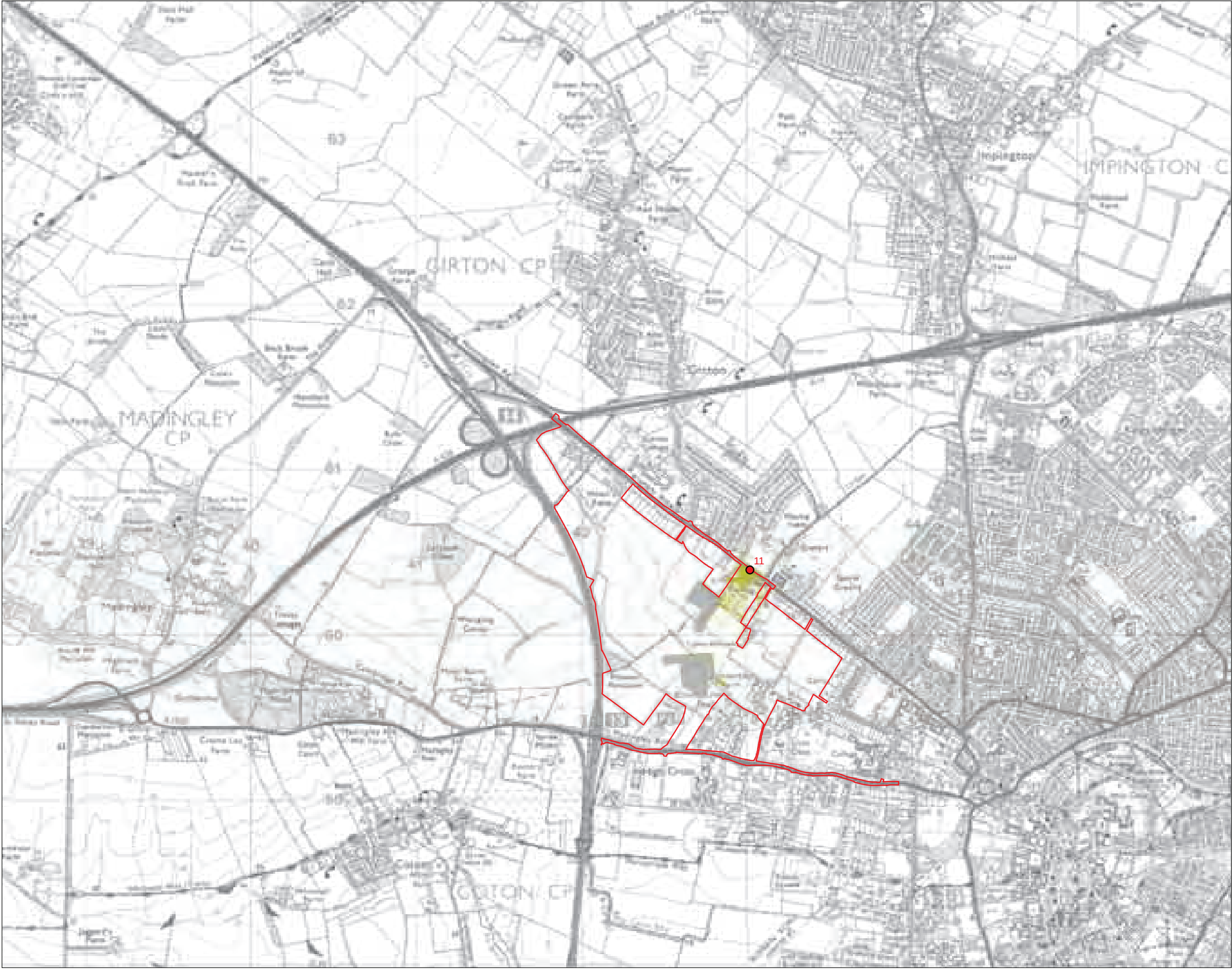
Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



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6.34	FIGURE
Landscape & Visual Assessment	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 10 - 2014	
1:22,000 @ A3	SCALE
60199513_6.34	DWG. NO.



KEY

The Application Site Boundary

Viewpoints

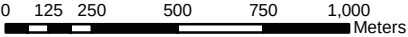
Theoretical visibility - 2014

Visible

Parameter Envelopes

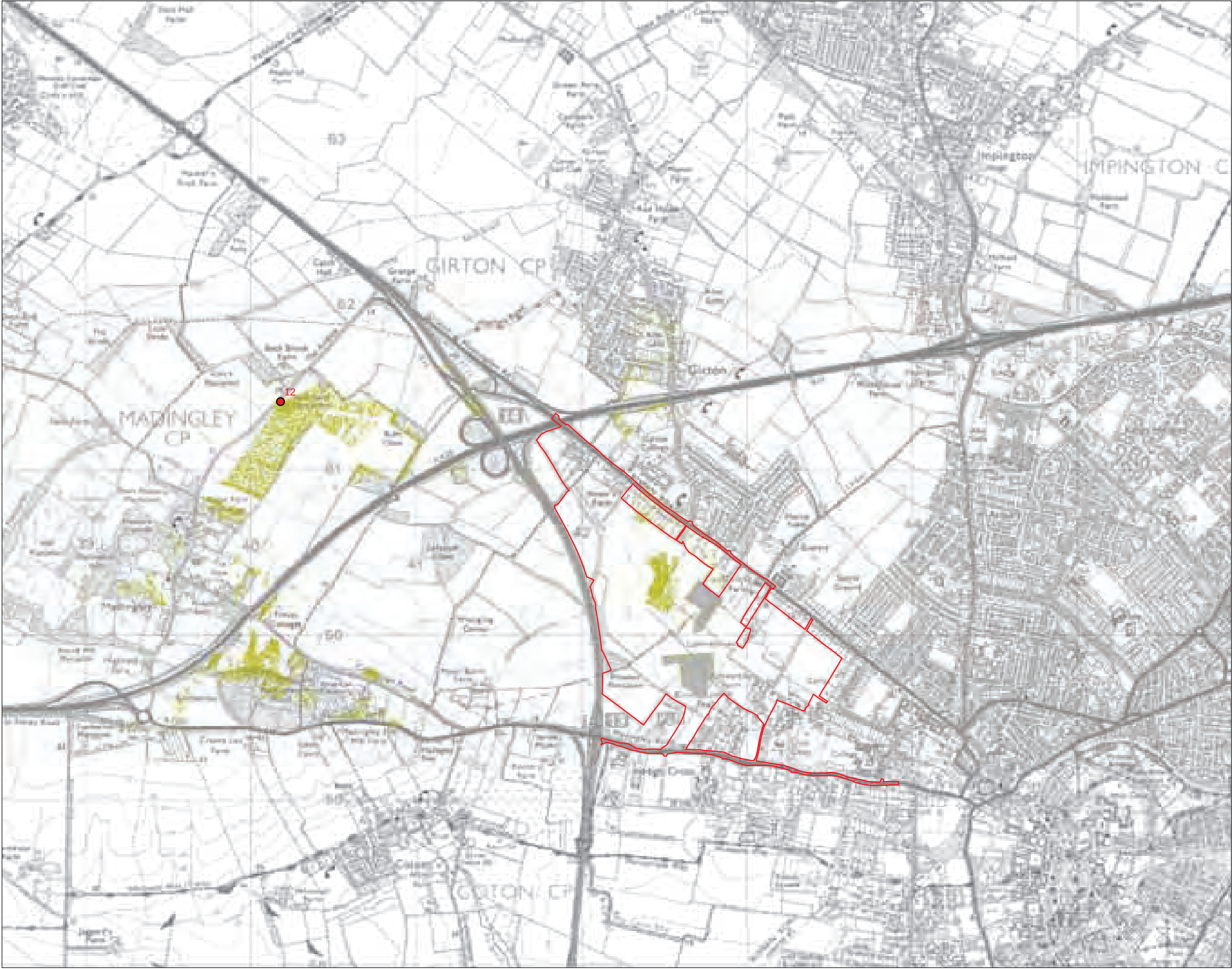
Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



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CAMBRIDGE

6.35	FIGURE
Landscape & Visual Assessment	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 11 - 2014	
1:22,000 @ A3	SCALE
60199513_6.35	DWG. NO.



KEY

The Application Site Boundary

Viewpoints

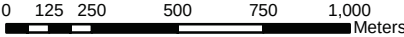
Theoretical visibility - 2014

Visible

Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



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6.36 <i>Landscape & Visual Assessment</i> Theoretical Building Block Visibility Viewpoint No. 12 - 2014 1:22,000 @ A3 60199513_6.36	FIGURE TITLE
	SCALE
	DWG. NO.



KEY

The Application Site Boundary

Viewpoints

Theoretical visibility - 2026

Visible

Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.

6.37

Landscape &
Visual Assessment

Theoretical Building
Block Visibility

Viewpoint No. 1 - 2026

1:22,000 @ A3

60199513_6.37

FIGURE
TITLE

SCALE

DWG. NO.

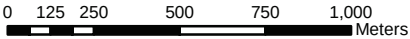
Information based on all known constraints.
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KEY

-  The Application Site Boundary
-  Viewpoints
- Theoretical visibility - 2026
 -  Visible
 -  Parameter Envelopes
 -  Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



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6.38
*Landscape &
Visual Assessment*
Theoretical Building
Block Visibility
Viewpoint No. 2 - 2026

1:22,000 @ A3

60199513_6.38

FIGURE
TITLE

SCALE

DWG. NO.





KEY

The Application Site Boundary

Viewpoints

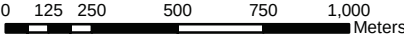
Theoretical visibility - 2026

Visible

Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



6.39

Landscape &
Visual Assessment

Theoretical Building
Block Visibility
Viewpoint No. 3 - 2026

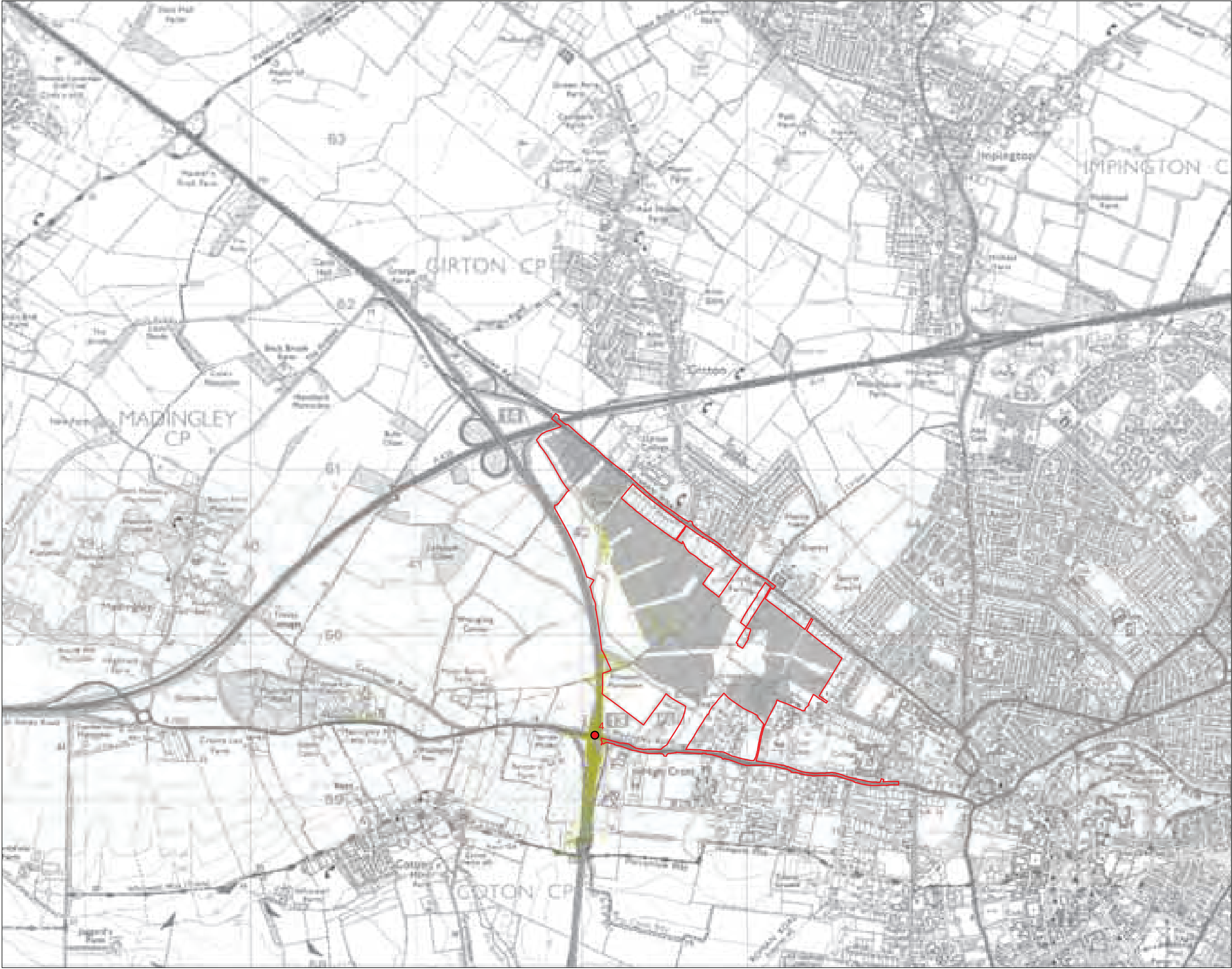
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60199513_6.39

FIGURE
TITLE

SCALE

DWG. NO.



KEY

The Application Site Boundary

Viewpoints

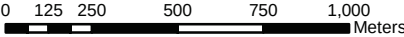
Theoretical visibility - 2026

Visible

Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



6.40	FIGURE
Landscape & Visual Assessment	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 4 - 2026	
1:22,000 @ A3	SCALE
60199513_6.40	DWG. NO.



KEY

The Application Site Boundary

Viewpoints

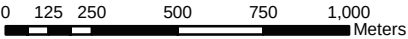
Theoretical visibility - 2026

Visible

Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.

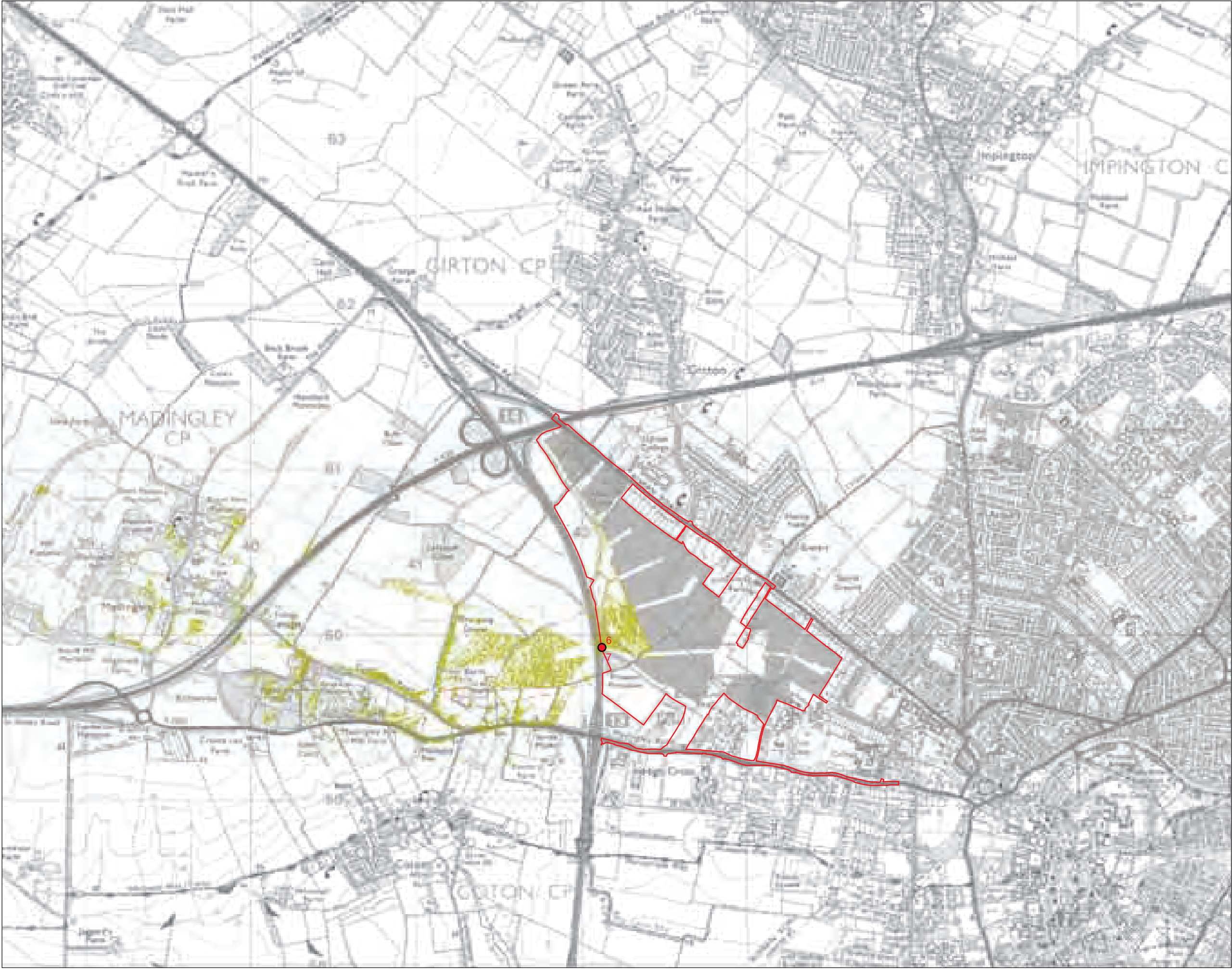


6.41
Landscape & Visual Assessment
Theoretical Building Block Visibility
Viewpoint No. 5 - 2026
1:22,000 @ A3
60199513_6.41

FIGURE
TITLE

SCALE

DWG. NO.



KEY

The Application Site Boundary

Viewpoints

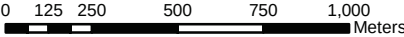
Theoretical visibility - 2026

Visible

Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



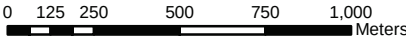
6.42	FIGURE
Landscape & Visual Assessment	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 6 & 7 - 2026	
1:22,000 @ A3	SCALE
60199513_6.42	DWG. NO.



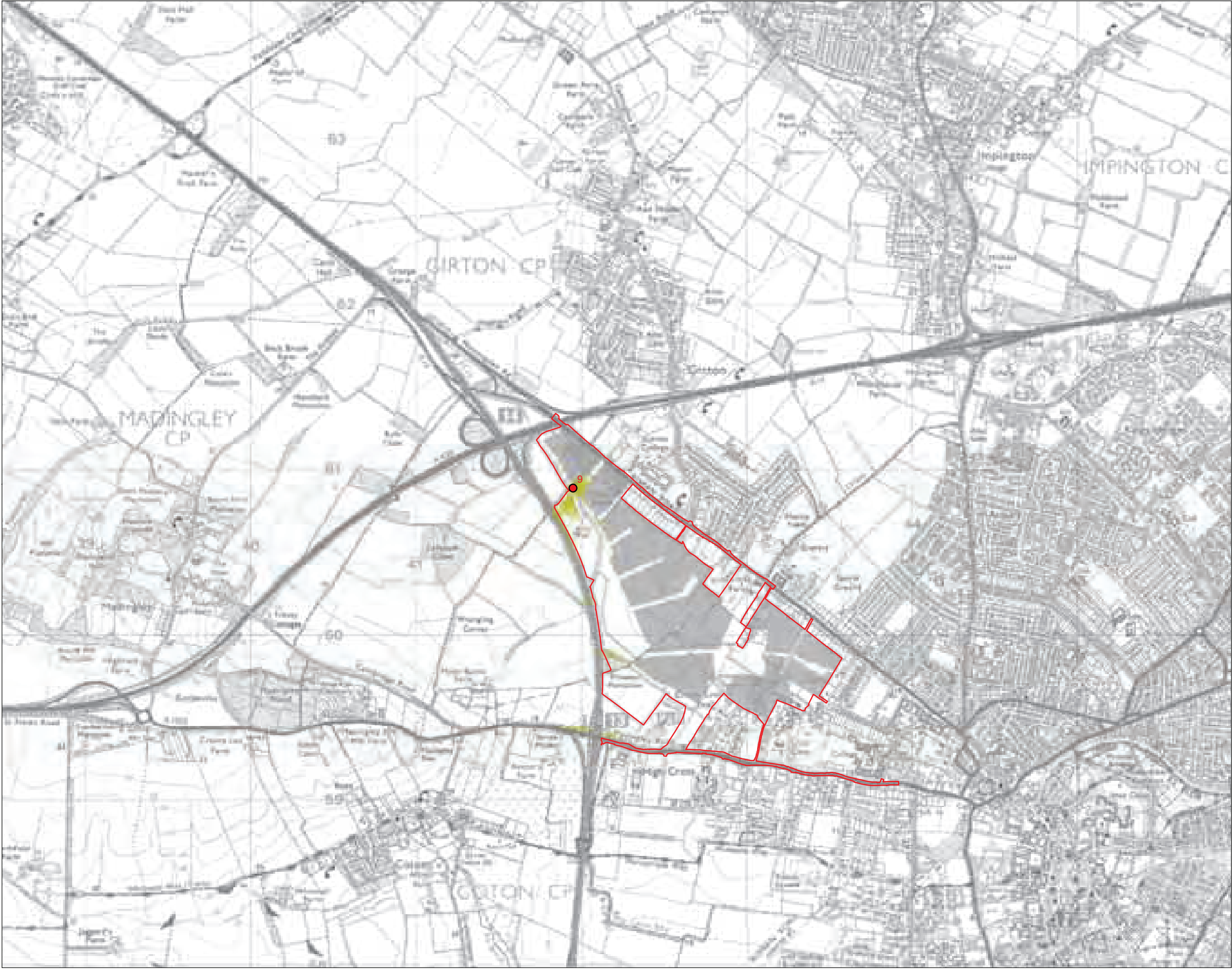
KEY

- The Application Site Boundary
- Viewpoints
- Theoretical visibility - 2026**
 - Visible
 - Parameter Envelopes
 - Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



6.43	FIGURE
Landscape & Visual Assessment	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 8 - 2026	
1:22,000 @ A3	SCALE
60199513_6.43	DWG. NO.



KEY

The Application Site Boundary

Viewpoints

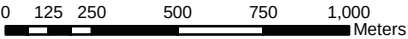
Theoretical visibility - 2026

Visible

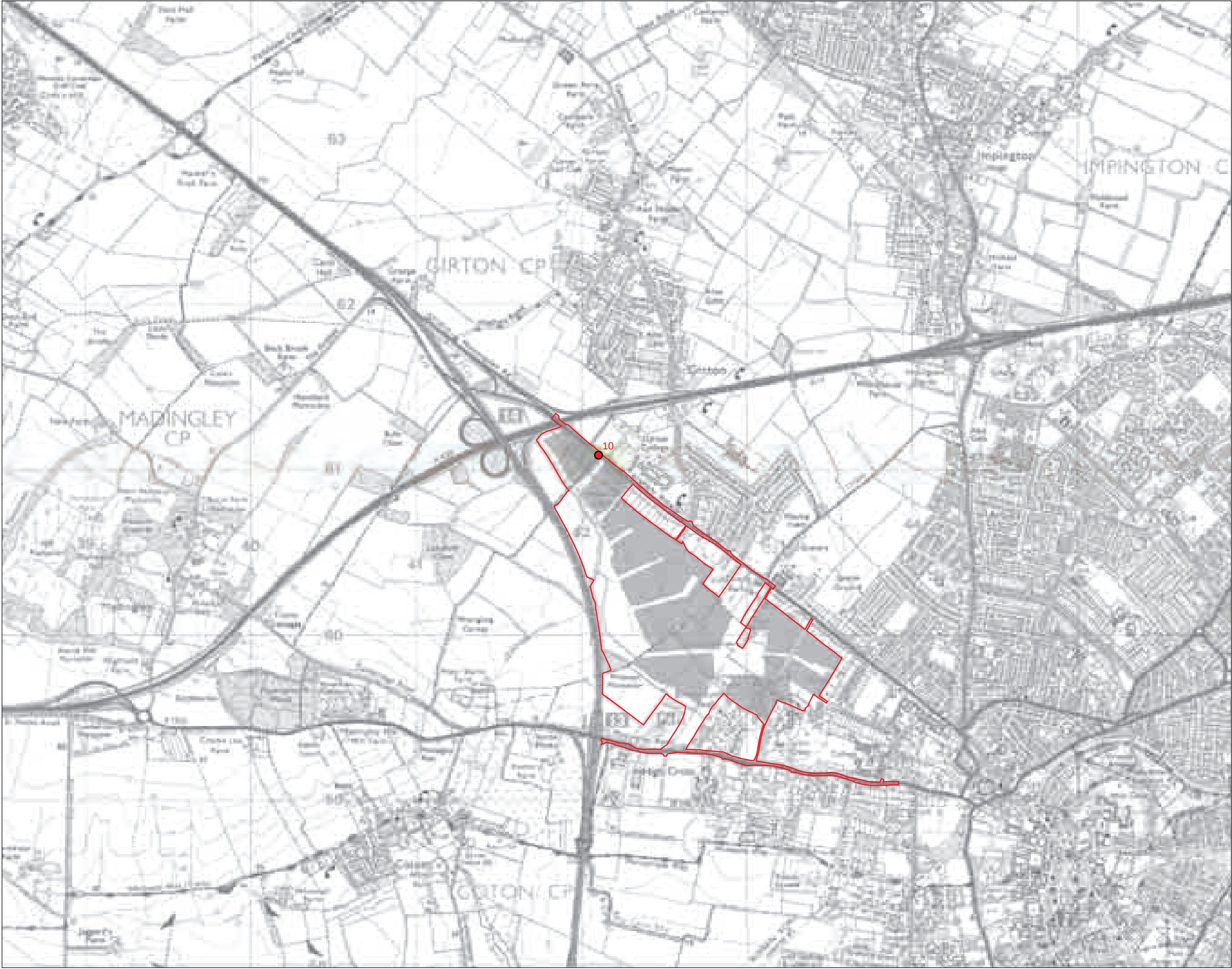
Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



6.44	FIGURE
Landscape & Visual Assessment	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 9 - 2026	
1:22,000 @ A3	SCALE
60199513_6.44	DWG. NO.



KEY

The Application Site Boundary

Viewpoints

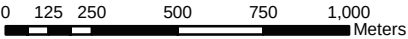
Theoretical visibility - 2026

Visible

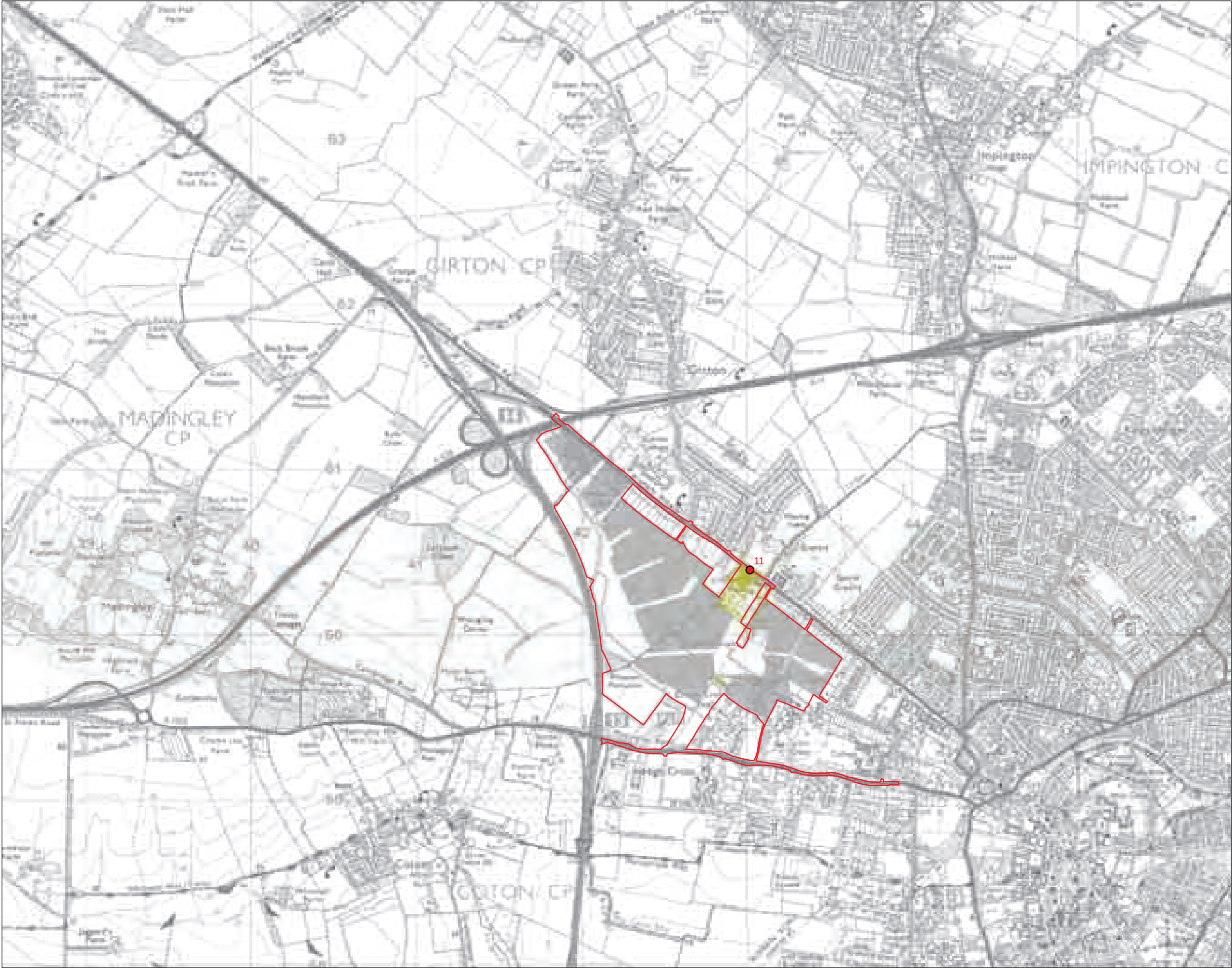
Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



6.45	FIGURE
Landscape & Visual Assessment	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 10 - 2026	
1:22,000 @ A3	SCALE
60199513_6.45	DWG. NO.



KEY

The Application Site Boundary

Viewpoints

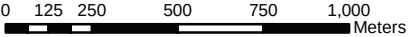
Theoretical visibility - 2026

Visible

Parameter Envelopes

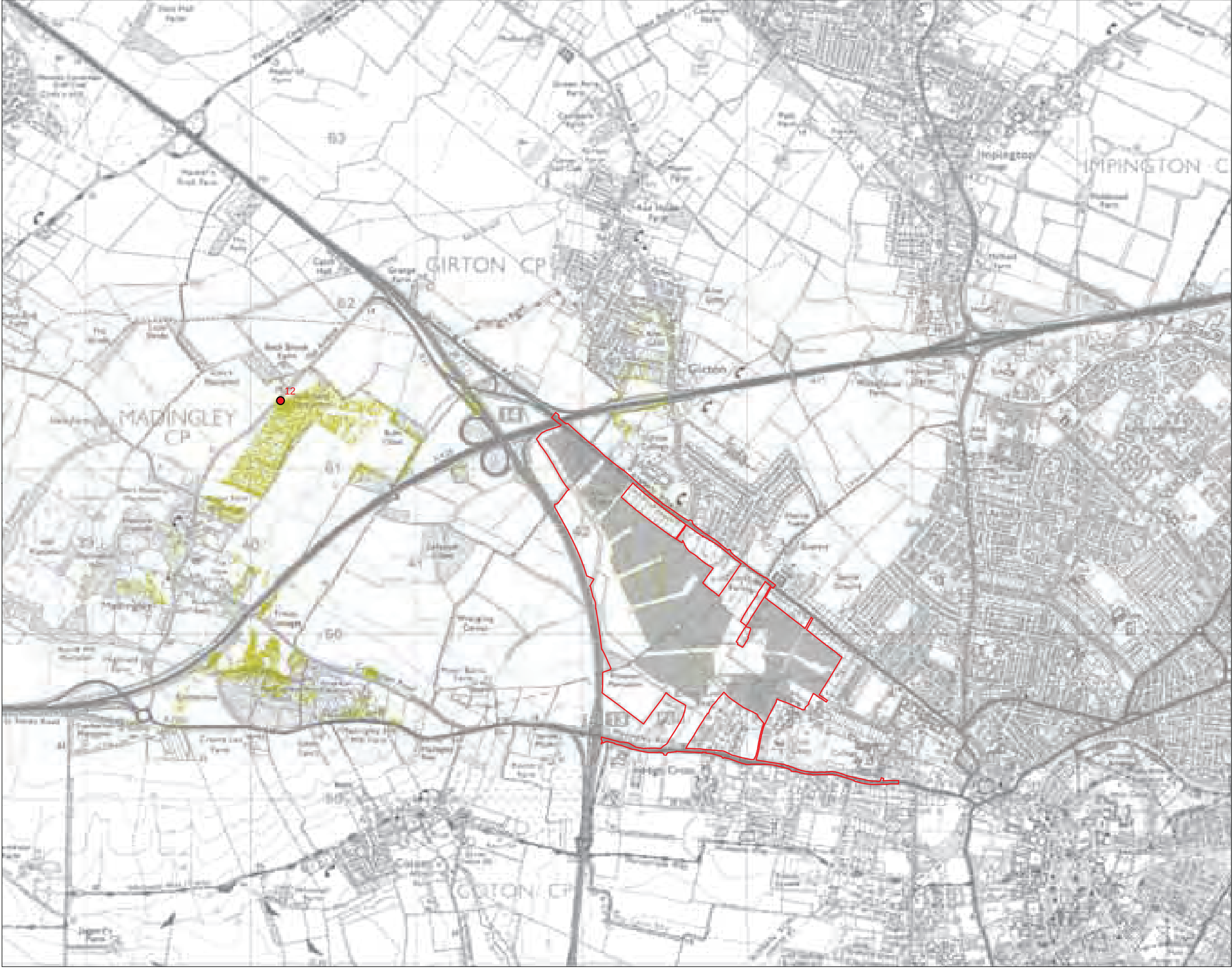
Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



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6.46	FIGURE
Landscape & Visual Assessment	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 11 - 2026	
1:22,000 @ A3	SCALE
60199513_6.46	DWG. NO.



KEY

The Application Site Boundary

Viewpoints

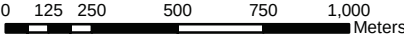
Theoretical visibility - 2026

Visible

Parameter Envelopes

Parameter Envelope Visibility

Note: The parameter envelopes have been merged into the Digital Surface Model based on Parameter Plan 06 Building Heights and Parameter Plan 04 Land Use. The resulting zones of Theoretical Visibility take into account the relative screening that existing buildings and features such as trees and vegetation may provide to the proposed development.



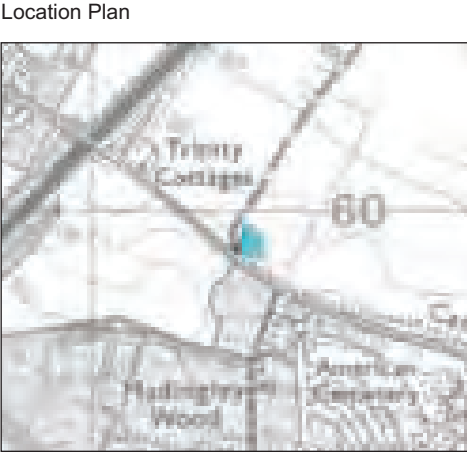
6.47	FIGURE
Landscape & Visual Assessment	TITLE
Theoretical Building Block Visibility	
Viewpoint No. 12 - 2026	
1:22,000 @ A3	SCALE
60199513_6.47	DWG. NO.



Viewpoint 1 Winter: Existing



Viewpoint 1 Winter 2026: Completed Development



- Notes:
- 1. The photomontages are based on maximum height parameters as set out in Parameter Plan 06: Building Heights.
 - 2. The block photomontages illustrate maximum potential extent of the proposed built development areas. They are not intended to show what the proposed development will be like but the maximum area within which they may occur.
 - 3. A layout of the proposed development area has been modelled using coloured 'development envelopes' corresponding with the colours used in Parameter Plan 04. The envelopes are modelled to the maximum extent of the proposed development as per the development parameters set out in Parameter Plan 04.



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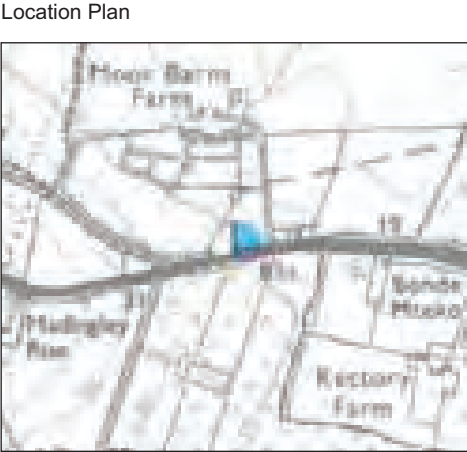
6.48	FIGURE
Landscape & Visual Assessment	TITLE
Viewpoint 1: Montage	
NTS	SCALE
60216015_6_48 _A	DWG. NO.



Viewpoint 2 Winter: Existing



Viewpoint 2 Winter 2026: Completed Development



- Notes:
- 1. The photomontages are based on maximum height parameters as set out in Parameter Plan 06: Building Heights.
 - 2. The block photomontages illustrate maximum potential extent of the proposed built development areas. They are not intended to show what the proposed development will be like but the maximum area within which they may occur.
 - 3. A layout of the proposed development area has been modelled using coloured 'development envelopes' corresponding with the colours used in Parameter Plan 04. The envelopes are modelled to the maximum extent of the proposed development as per the development parameters set out in Parameter Plan 04.

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6.49	FIGURE
Landscape & Visual Assessment	TITLE
Viewpoint 2: Montage	
NTS	SCALE
60216015_6_49_A	DWG. NO.

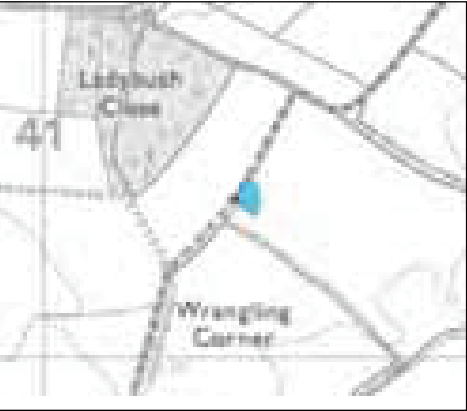


Viewpoint 3 Winter: Existing



Viewpoint 3 Winter 2026: Completed Development

Location Plan



Notes:

1. The photomontages are based on maximum height parameters as set out in Parameter Plan 06: Building Heights.
2. The block photomontages illustrate maximum potential extent of the proposed built development areas. They are not intended to show what the proposed development will be like but the maximum area within which they may occur.
3. A layout of the proposed development area has been modelled using coloured 'development envelopes' corresponding with the colours used in Parameter Plan 04. The envelopes are modelled to the maximum extent of the proposed development as per the development parameters set out in Parameter Plan 04.



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6.50
**Landscape &
Visual Assessment**
Viewpoint 3: Montage

FIGURE
TITLE

NTS

SCALE

60216015_6_50_A

DWG. NO.



Viewpoint 6 Winter: Existing



Viewpoint 6 Winter 2026: Completed Development



- Notes:
- 1. The photomontages are based on maximum height parameters as set out in Parameter Plan 06: Building Heights.
 - 2. The block photomontages illustrate maximum potential extent of the proposed built development areas. They are not intended to show what the proposed development will be like but the maximum area within which they may occur.
 - 3. A layout of the proposed development area has been modelled using coloured 'development envelopes' corresponding with the colours used in Parameter Plan 04. The envelopes are modelled to the maximum extent of the proposed development as per the development parameters set out in Parameter Plan 04.

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6.51
Landscape & Visual Assessment
Viewpoint 6: Montage

FIGURE

TITLE

NTS

SCALE

60216015_6_51_A

DWG. NO.

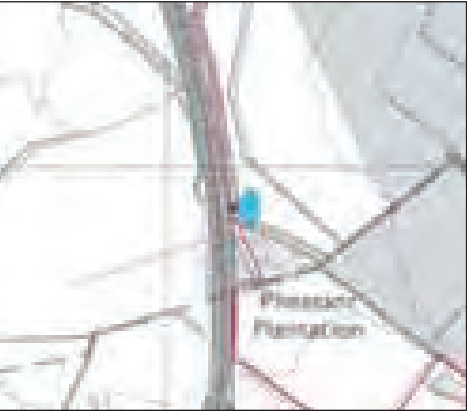


Viewpoint 7 Winter: Existing



Viewpoint 7 Winter 2026: Completed Development

Location Plan



Notes:

1. The photomontages are based on maximum height parameters as set out in Parameter Plan 06: Building Heights.
2. The block photomontages illustrate maximum potential extent of the proposed built development areas. They are not intended to show what the proposed development will be like but the maximum area within which they may occur.
3. A layout of the proposed development area has been modelled using coloured 'development envelopes' corresponding with the colours used in Parameter Plan 04. The envelopes are modelled to the maximum extent of the proposed development as per the development parameters set out in Parameter Plan 04.

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6.52
**Landscape &
Visual Assessment**
Viewpoint 7: Montage

FIGURE

TITLE

NTS

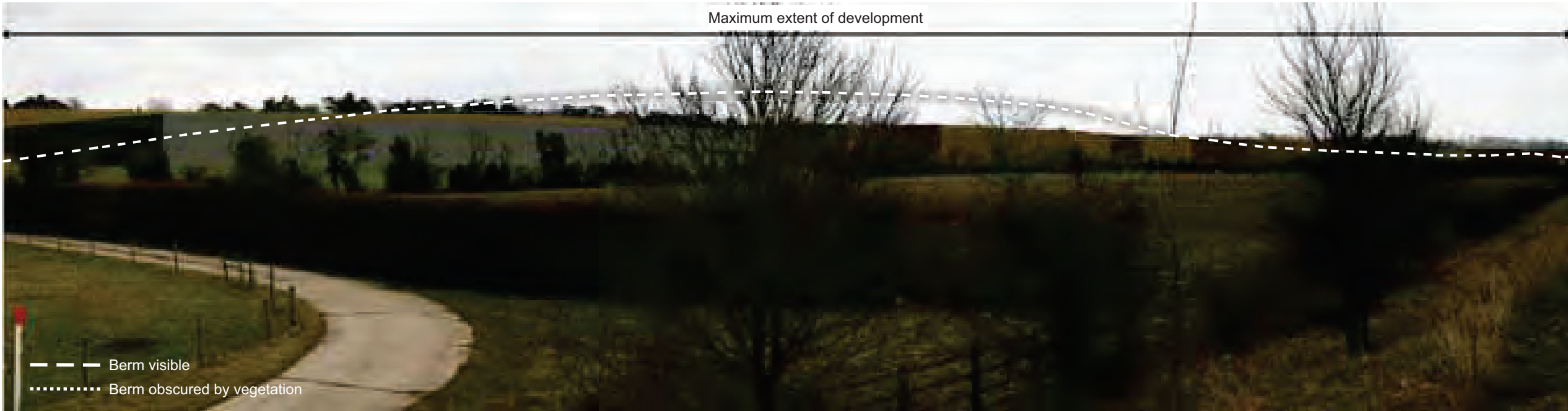
SCALE

60216015_6_52_A

DWG. NO.



Viewpoint 8 Winter: Existing



Viewpoint 8 Winter 2026: Completed Development



- Notes:
1. The photomontages are based on maximum height parameters as set out in Parameter Plan 06: Building Heights.
 2. The block photomontages illustrate maximum potential extent of the proposed built development areas. They are not intended to show what the proposed development will be like but the maximum area within which they may occur.
 3. A layout of the proposed development area has been modelled using coloured 'development envelopes' corresponding with the colours used in Parameter Plan 04. The envelopes are modelled to the maximum extent of the proposed development as per the development parameters set out in Parameter Plan 04.

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6.53	FIGURE
Landscape & Visual Assessment	TITLE
Viewpoint 8: Montage	
NTS	SCALE
60216015_6_53_A	DWG. NO.



Viewpoint 10 Winter: Existing



Viewpoint 10 Winter 2026: Completed Development



- Notes:
- 1. The photomontages are based on maximum height parameters as set out in Parameter Plan 06: Building Heights.
 - 2. The block photomontages illustrate maximum potential extent of the proposed built development areas. They are not intended to show what the proposed development will be like but the maximum area within which they may occur.
 - 3. A layout of the proposed development area has been modelled using coloured 'development envelopes' corresponding with the colours used in Parameter Plan 04. The envelopes are modelled to the maximum extent of the proposed development as per the development parameters set out in Parameter Plan 04.



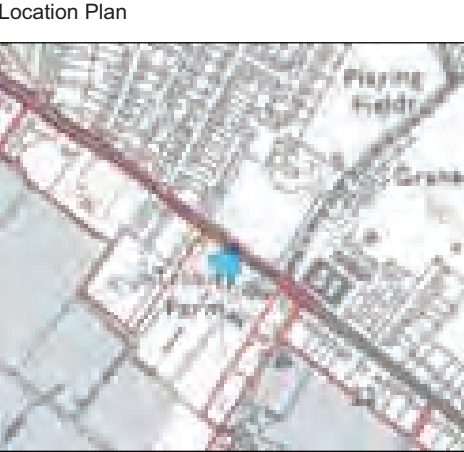
6.54	FIGURE
Landscape & Visual Assessment	TITLE
Viewpoint 10: Montage	
NTS	SCALE
60216015_6_54	DWG. NO.



Viewpoint 11 Winter: Existing



Viewpoint 11 Winter 2026: Completed Development



- Notes:
- 1. The photomontages are based on maximum height parameters as set out in Parameter Plan 06: Building Heights.
 - 2. The block photomontages illustrate maximum potential extent of the proposed built development areas. They are not intended to show what the proposed development will be like but the maximum area within which they may occur.
 - 3. A layout of the proposed development area has been modelled using coloured 'development envelopes' corresponding with the colours used in Parameter Plan 04. The envelopes are modelled to the maximum extent of the proposed development as per the development parameters set out in Parameter Plan 04.



6.55	FIGURE
Landscape & Visual Assessment	TITLE
Viewpoint 11: Montage	
NTS	SCALE
60216015_6_55	DWG. NO.



NORTH WEST **cambridge**

Programme of Archaeological Works (Sites II and IV)

Condition 63

October 2012

North West Cambridge

UNIVERSITY OF CAMBRIDGE

Project Specification for Archaeological Excavation

(Phase 1/Sites II & IV; revised)

ECB *forthcoming*

BACKGROUND

1.1 Site Description

The *c.* 150ha development site lies in the western hinterland of Cambridge (centred TL 42805990). In the main, its underlying geology consists of gault clays, although a band of Head and Observatory Bed gravels (corresponding to a distinct ridge in the landscape) runs northwest-southeast across the south-centre of the area.

This WSI specifically relates to the planning application for North West Cambridge (REF C/11/1114/OUT and S/1886/11), and reflects the archaeological assessment included within the Environmental Statement and approved as part of the application. This WSI is submitted to discharge, in part, Condition 62, which requires that:

No development shall take place before the implementation of a programme of archaeological works in accordance with a written scheme of investigation which has been submitted to and approved by the Local Planning Authority. Development within areas identified for archaeological investigation in the approved written scheme shall not commence until the archaeological fieldwork in those areas has been completed and the Local Planning Authority has confirmed in writing that the archaeological fieldwork has been completed satisfactorily. The archive report and publication shall be submitted to the Local Planning Authority within 6 months following completion of the archaeological investigations.

1.2 Previous Work

Including aerial photographic plotting, the broader archaeological and historical background for the area has been fully outlined in an earlier Desktop Study (Redfern 2001; revised 2008). The key points which this highlighted were both the scale of the area’s usage in Roman times and also the extent of 19th century gravel and coprolite quarrying therein. This, indeed, proved to be the case when the site was evaluated and, following limited-scale preliminary investigations in 2002 (Mackay *et al.* 2002) and 2008 (Anderson & Hall 2008; Armour 2008), the CAU undertook a major trench-based evaluation across the area between April and November of 2009 (Evans & Newman 2010); in addition, fieldwalking and geophysical surveys were also conducted as part of the programme.

From this, 11 sites were identified (though, in the end, Site XI fell beyond the borders of the final development zone). Of these, with the probable Site VII villa earmarked for preservation *in situ* (for which a long-term management scheme will be prepared and agreed), only two fall within the bounds of the development’s early works (see Fig. 1):

Site II - A Roman and Middle Iron Age settlement (also involving a distinct Bronze Age component), with the latter being particularly dense along the south side of Field 132. Note that, relating to findings within the immediate area during the early decades of the last century, both Palaeolithic and Neolithic flintwork has also been recovered from the area; Neolithic pottery was also recovered from two trenches in the west-centre of that field. As it is currently defined (the western limits of the site have yet to be fully established), in the northwest this site complex appears to include still another Iron Age foci and further Neolithic pottery was also found in the corner of Field D/‘Dry Field’.

Site IV - In the main, this seems a major, high-status Roman settlement complex, and potentially even a villa site. A formal inhumation cemetery has been identified through its west-

central swathe and very high artefact densities were found throughout its central sector. In addition, due to perched watertable conditions, waterlogging has been encountered within some of its deeper features. Having the promise of excellent environmental preservation (e.g. pollen and plant remains), a piece of fine lathe-turned woodwork was also recovered – probably a scrollwork ornament from a chair or the like. Though the artefact and feature density is lower along the site’s eastern side, there both distinctly Early Roman and Bronze/Iron Age features were also found, and Neolithic pottery was recovered in one trench along the site’s north-central margin.

That said, it is likely that Site VI (Iron Age/Early Roman) will also be affected by drainage/landscaping works; its fieldwork will be subject to a separate specification. Of the other sites affected by Phase 1 works, Site III only consists of the line of a minor Late Medieval driveway and, test-excavated during the evaluation-phase (Evans & Newman 2010), it does not warrant further investigation. (Note that, largely falling within the area of the relocated SSSI, the eastern half of Site II will be preserved *in situ* and left undisturbed by building groundworks.) Similarly, as part of the archaeological works, Site V will be excavated in July/August of 2012 to avoid any possible drying out of its waterlogged features through construction-related dewatering (a separate specification also being submitted for its fieldwork programme).

1.3 Circumstances of the Project

The fieldwork is undertaken anticipating the long-term construction of the proposed development, which will eventually include new University buildings, housing and landscaped open land.

1.4 Archive Deposition

The site assemblages and archive will be temporarily retained by the CAU pending deposition in an approved County Store; ownership of finds will be assigned to the County Council.

AIMS AND OBJECTIVES

2.1 Research Framework and Aims

The wider North West Cambridge-area research agenda/background - particularly its contribution to understanding the dynamics of Cambridge’s western hinterland settlement sequence - was fully detailed within the main evaluation report (Evans & Newman 2010). Aside from investigating the general character of the area’s prehistoric land-use (i.e. when its ‘inland’ gravel terrace was first substantially settled, apparent paucity of monuments, *etc.*), for the immediate purposes of Sites II/IV’s excavation the main issues to address are:

1) What was the interrelationship between the Roman complex and the preceding Iron Age settlements - direct continuity or hiatus?

2) Did, in particular, Site IV’s Roman occupation involve something other than just a major farmstead; was it a secondary-tier crossroads ‘centre’, perhaps involving a market function and/or a ‘quality’ residence/buildings? Equally, was it directly related to the Girton College settlement, from which high-quality sculpture pieces of the period were recovered (Hollingworth & O’Reilly 1925)?

3) What was the nature of Sites II/IV’s Roman economy: did it involve the importation of food stuffs from the adjacent clayland farms (e.g. consumer *vs.* producer settlement) and/or did it itself contribute the same to Roman Cambridge proper?

2.2 Publication and Presentation

The results will appear within a *c.* 400-500 page-long monograph that will cover the archaeology and historic development of the North West Cambridge Application Site.

In order to further the dispersion of the sites' results, as detailed below, the excavations will also involve a major outreach programme.

METHODS STATEMENT

3.1 Programme

Together amounting to 14.5ha of open-area excavation, as shown on the accompanying plan (Fig. 2), both of the designated sites have areas of what has been characterised as 'intense' archaeology (i.e. feature-dense and artefact-rich) and which extends over 3ha. Accordingly, a staged and 'tiered' excavation strategy will be implemented:

- 1) Prior to machine-stripping, both site areas will be metal-detected, by 10m-long collection units along 5m- and 20m-wide transects across, respectively, the intense and non-intense areas.
- 2) The sites' machine-stripping will be undertaken by dedicated monitoring teams, allowing for features to be digitally base-planned and metal-detected during the course of the stripping (1.5 weeks per hectare).
- 3) As detailed below (see 3.2), using a team of 12 (10 Site Assistants, plus Director and Supervisor), the 3ha of intensive archaeology will together see 16 weeks of excavation; with the remaining non-intensive areas being allocated four weeks excavation per hectare by a team of six (excluding machine-stripping and base-planning, *etc.*).

It should be noted that though the western third of Site IV actually lies outside of the Phase 1 development zone and within the second phase area, for the sake of archaeological and 'public' coherence the University has decided to progress with the excavation of the entire site at this time.

In addition to the main programme there will also be provision to excavate up to 300m-length of trenching between Sites IV and VI to further elucidate their fieldsystem boundaries. Equally, should significant feature groups extend beyond the limits of excavation there is contingency provision if their further excavation is required.

Also, in order to potentially investigate the area's renowned Palaeolithic finds, there will be watching brief monitoring of any deep basement-reductions down into the gravels (i.e. not piling).

3.2 Excavation Procedures

Aside from recent-date quarries, all features will be excavated. Throughout this will involve not less than 50% of each discrete feature, with all structural deposits to be 100% excavated. For linear features, the basic unit of excavation will be metre-long segments; aside from the fact that all ditch junctions will be appropriately investigated, within the non-intensive zone these will be excavated on an interval of not more than one in 30m and, within the intensive-excavation areas, the interval of direct settlement-/building-related ditches will be one in 4m.

The Unit-modified Museum of London recording system (Spence 1990), including full digital photographic record (with there also being film-shot publication imagery), will be employed throughout. Base plans will be variously drawn at 1:50 and 1:20 (dependent upon their structural complexity), with sections recorded at 1:10.

There will be full compliance with the Treasure Act and any 'treasure finds' recovered during fieldwork will be immediately reported to the County's Finds Liaison Officer of the Portable Antiquities Scheme (for reportage to the appropriate coroner).

3.3 Environmental Deposits

Soil samples will be taken from appropriate contexts (e.g. waterlogged or charcoal-rich) and assessed for molluscan and macro-botanical remains; it is anticipated that not less than 150 samples will be processed and assessed. Although many of the sites' samples showed evidence of having once been waterlogged and subsequently dried out, substantive cereal assemblages were still recovered (grain, as well as chaff; see de Vareilles in Evans & Newman 2010). The rationale behind the site's plant remains sampling is to detail the location of the settlements' crop-processing activities; emphasis will also be given to the geographic/topographic source of their arable weeds to determine whether crops were being grown on adjacent clayland farms and exported up to the major settlements upon the gravel terrace (this being distinguished at Site IV; *ibid.*). In addition, the mollusc shells from the samples will be studied for the purposes of habitat-reconstruction, and the distribution of their small finds-fractions will also be analysed so that the location of middens, *etc.* can be plotted.

Pollen cores will be taken and assessed from any deep waterlogged deposits, and Prof. CAI French will study the soil micromorphology of any surviving significant horizontal strata. Also, should significant prehistoric features be recovered there is provision for their radiocarbon dating.

3.4 Excavation Timetable

The 20 week-long excavation programme is scheduled to begin in the late autumn of this year, with the fieldwork completed by April.

3.5 Constraints

There are ecological constraints imposed upon the programme. The most significant is a Badger sett located in the extreme southeast corner of Site II. This will need to be closed under licence to Natural England as part of the Proposed Development. No excavation will take place within 30m of the sett until it has been closed and subsequently destroyed. The 30m zone will be demarcated by appropriate (netlon-type) fencing, the installation of which will be overseen by the project's ecologist before archaeological excavations commence within that area.

Equally, there is a 'veteran'/preservation order oak along the southern side of Site IV. The project's arboricultural specialist will duly determine what stand-off is necessary for it and this area will be fenced off and left undisturbed.

OUTREACH PROGRAMME

4.1 Public Presentation

In addition to having a dedicated project outreach officer (half-time for 16 weeks), provision has been made for the following:

- 1) At the commencement of the fieldwork an A5 colour brochure will be issued *gratis* to all neighbours and, later, visitors to the site, which will outline the area's archaeology and the scope of the excavation programme.
- 2) There will be a dedicated project website page, hosted by the University, which will be updated on a bi-monthly basis.
- 3) A single two week-long 'public' excavation will be conducted allowing up to 15 volunteers to dig on part of the site (otherwise sample-excavated by the CAU) under professional supervision, when they will receive appropriate training.
- 4) Having a target audience-size of 600 visitors each, there will be two public open-days.
- 5) As was implemented during the Vicar's Farm, West Cambridge excavations, there will be a dedicated Schools' Visit week during which 10-20 class visits are expected.

In addition, there will be regular media/press releases and the HET will be informed when all outreach events occur.

4.2 Arts Initiatives

Although not entirely finalised at this time, it is likely that the excavations will link to the artist-in-residence programme established through the Public Arts Strategy. Other related initiatives being explored include casting geological sections from the Traveller's Rest Pit beds and having them exhibited on building facades, as well as - upon the completion of its excavation - turning the settlement-core of Site IV over to stage Shakespeare's Roman plays (i.e. using the footprints of 'real' period buildings).

POST-EXCAVATION

5.1 Specialists

English Heritage's MORPHE guidelines will be followed throughout. Post-excavation finds work will be co-ordinated by the CAU Finds Officer and conform to the practices and standards described in *Preparation of Archaeological Archives; Selection, Retention and Dispersal of Archaeological Collections* (1993) and the Institute of Field Archaeologist's *Draft Standards and Guidance for Finds Work* (2000).

The appointed project specialists are:

Name	Organisation	Field of Expertise	Status
J. Matthews/A. Hall	U. of Cambridge	Illustration/Computing	Staff
A. de Vareilles	U. of Cambridge	Plant and mollusc macrofossils	Staff
J. Wiles	U. of Cambridge	Finds Processing	Staff
G. Appleby	U. of Cambridge	Metalwork	Staff
L. Billington	U. of Cambridge	Prehistoric flint	Staff
Dr S. Boreham	U. of Cambridge	Pollen	Dept of Geography
N. Dodwell	U. of Cambridge	Human bone	Staff
Dr C. French	U. of Cambridge	Soil Micromorphology	Dept of Archaeology
D. Hall	Freelance	Saxon & Medieval Ceramics	Freelance
V. Rajkovaca	U. of Cambridge	Faunal Remains	Staff
Dr M. Brudenell	U. of Cambridge	Iron Age pottery	Staff
R. Reece	Freelance	Roman coins	Freelance
C. Stimpson	U. of Cambridge	Bird bone	Freelance
Claire Ingrem	Freelance	Fish Bone	Freelance
K. Anderson	Freelance	Roman Ceramics	Freelance
M. Knight	U. of Cambridge	Prehistoric Ceramics	Staff

5.2 Timetable

Post-excavation will begin on the conclusion of fieldwork. An interim statement will be prepared within eight weeks of its completion; the assessment report eight months thereafter (an Oasis record will be made and the form submitted with the assessment report), with the publication text then finished 18 months after that. (All of the above-listed reports will first be issued to HET in draft form for due comment and all will carry the project’s HER Event Number.) That said, this only pertains to Sites II and IV, and their publication itself may be delayed awaiting the results of any sites that are dug in the following year (e.g. Site VI; subject to a separate specification). It is, however, anticipated that the final volume will be published no later than 2015.

RESOURCES AND PROGRAMMING

6.1 Staffing

The project will be managed by Christopher Evans, MIFA, FSA and Prof. Martin Millet (Dept of Classics, University of Cambridge) has agreed to jointly provide on-site intellectual/research guidance (i.e. bi-weekly visits). The field team will consist entirely of professional staff from the CAU and will include a Director, Site Supervisor and, at any one time, up to 15 Site Assistants; all together, some 515 personnel-week’s of excavation are budgeted.

6.2 Equipment

The programme will require the hire of earthmoving machines and on-site office and toilet facilities; public outreach will variously involve the hire of marquees and duckboards, *etc.*

6.3 Health & Safety and Insurance

Health and Safety provision will be made according to the SCAUM Health and Safety in Field Archaeology Manual. A risk assessment will be completed before the excavation.

The University has Public Liability Insurance to the value of £15 million and Professional Indemnity Insurance to the value of £10 million.

6.4 Budget

An adequate budget will be agreed with the client to cover the cost of excavation, post-excavation assessment and publication.

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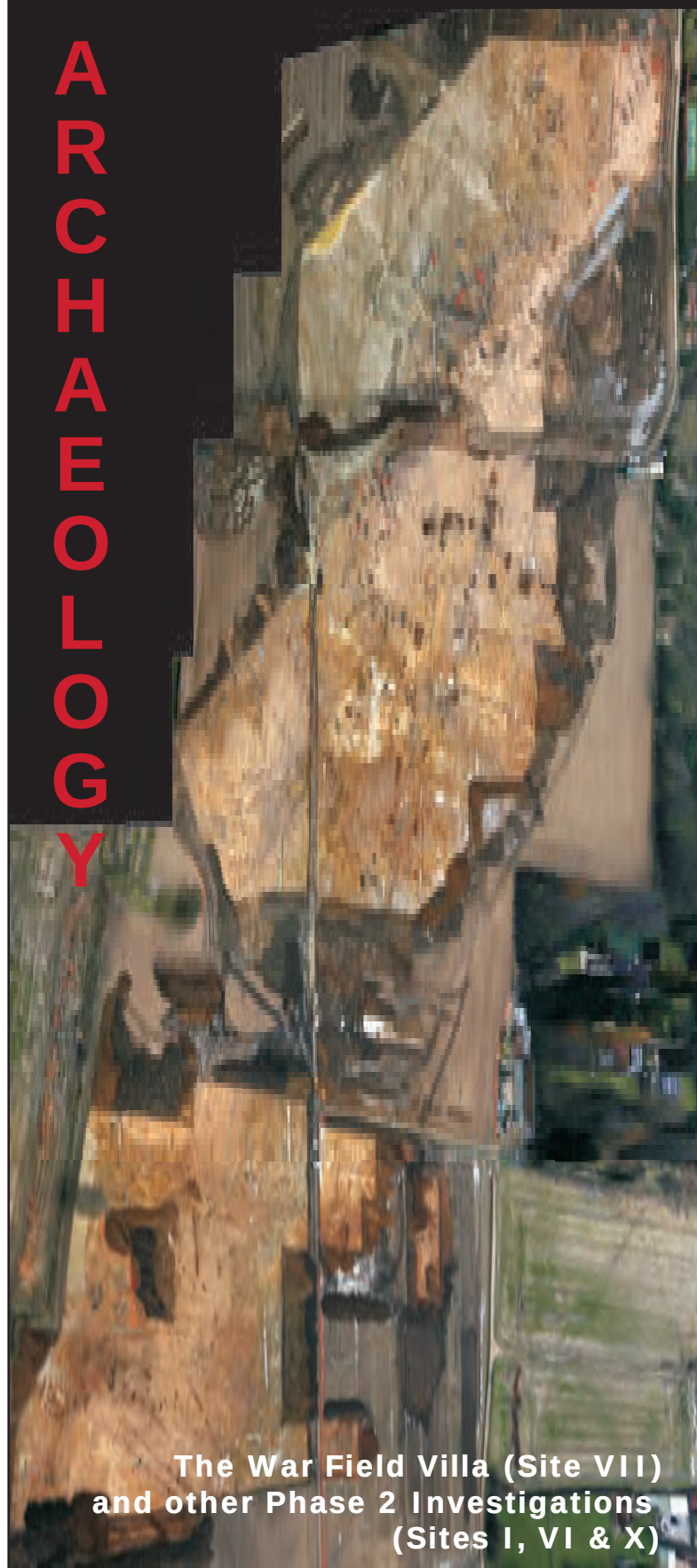
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ANNEX I: NORTH WEST CAMBRIDGE ARCHAEOLOGY REPORT

NORTH WEST CAMBRIDGE

ARCHAEOLOGY

No. 9
(1)



The War Field Villa (Site VII)
and other Phase 2 Investigations
(Sites I, VI & X)

Marcus Brittain and Christopher Evans

NORTH WEST CAMBRIDGE ARCHAEOLOGY

University of Cambridge
The War Field Villa (Site VII) and other Phase 2
Investigations (Sites I, VI & X)
– TEXT –
(2018–19; NWC Report No. 9, Pt. 1)

Marcus Brittain and Christopher Evans

With contributions by Emma Beadsmoore, Steve Boreham,
Chris Boulton, Val Fryer, Vicki Herring, Floor Huisman, Francesca Mazzilli,
Ben Neil, Sarah Percival, Simon Timberlake,
Vida Rajkovača and Justin Wiles

With illustrations by Bryan Crossan and Andrew Hall;
photography by Dave Webb

CAMBRIDGE ARCHAEOLOGICAL UNIT
University of Cambridge
September 2019 / Report No. 1435
HER Event Number: 4113 & 4179

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Having run since August of the previous year, February of 2019 saw the completion of the programme's final excavations and the digging of those sites that will be affected by the development's next stage of construction. While the fieldwork at two – Sites I and X – was relatively minor, the Sites VI and VII's investigations were of a much larger scale (Fig. 1). The latter, a Roman villa-estate complex (Site VII), was challenging and, proving spectacular, was a fitting way to conclude a fieldwork programme that, off and on, has continued over 17 years.

The project's broader historical/archaeological background and topographic setting has been thoroughly outlined in the many reports already issued from it (e.g. Redfern 2001; Evans & Newman 2010). Accordingly, these will not be rehearsed again here and – in what is now the face of so much – where we can, things will be kept simple.

Site I

A c. 600sqm area was opened, it being curtailed by former quarry pits on its eastern and northern sides, with its western extent limited by badger setts (Fig. 2). The reason for its exposure related to northwestern projection of one of the flanking ditches of Site II's Roman road (No. 6). While the fieldwork's prime aim was to firmly fix this route, in addition was that some quantity of prehistoric material had been forthcoming from its evaluation fieldwork: 14 worked flints and c. 80 sherds of pottery; the latter all being of Iron Age date apart from a few Neolithic sherds (Mackay *et al.* 2002). Aside from the eight metre-segments then dug across the ditch itself (F.1), much of this material was forthcoming from a c. 0.50m across 'spread' cut by the ditch: a flint and 21 sherds of Early Iron Age pottery (plus three of Romano-British date and a few Neolithic). From the area's single pit ([29]) – 0.50m across and 0.40m deep – 15 sherds of Iron Age pottery and two flints were recovered (see Roberts in *ibid.*, 14 concerning the environmental samples from this feature and F.1).

In the course of the 2018 excavation, a 25m length of the ditch (F.1/F.4901) was exposed in total, and a further five metre-segments were dug along it. These essentially bracketed the evaluation-dug segments, with two conjoining segments located at the feature's northwestern end and a longitudinal half-section was taken beyond them to demonstrate the feature's truncation by the deep coprolite quarry pits at that end.

Generally having a broad 'V'-shaped profile, the road-defining ditch was 1.55–1.85m wide and c. 0.55–.75m deep. From these cuttings a further six sherds (refitting; of later Iron Age date) and 13 flints were recovered (see Percival and Beadsmoore below). Aside from a modern pit (F.4900), no further discrete features or deposits were then otherwise present.

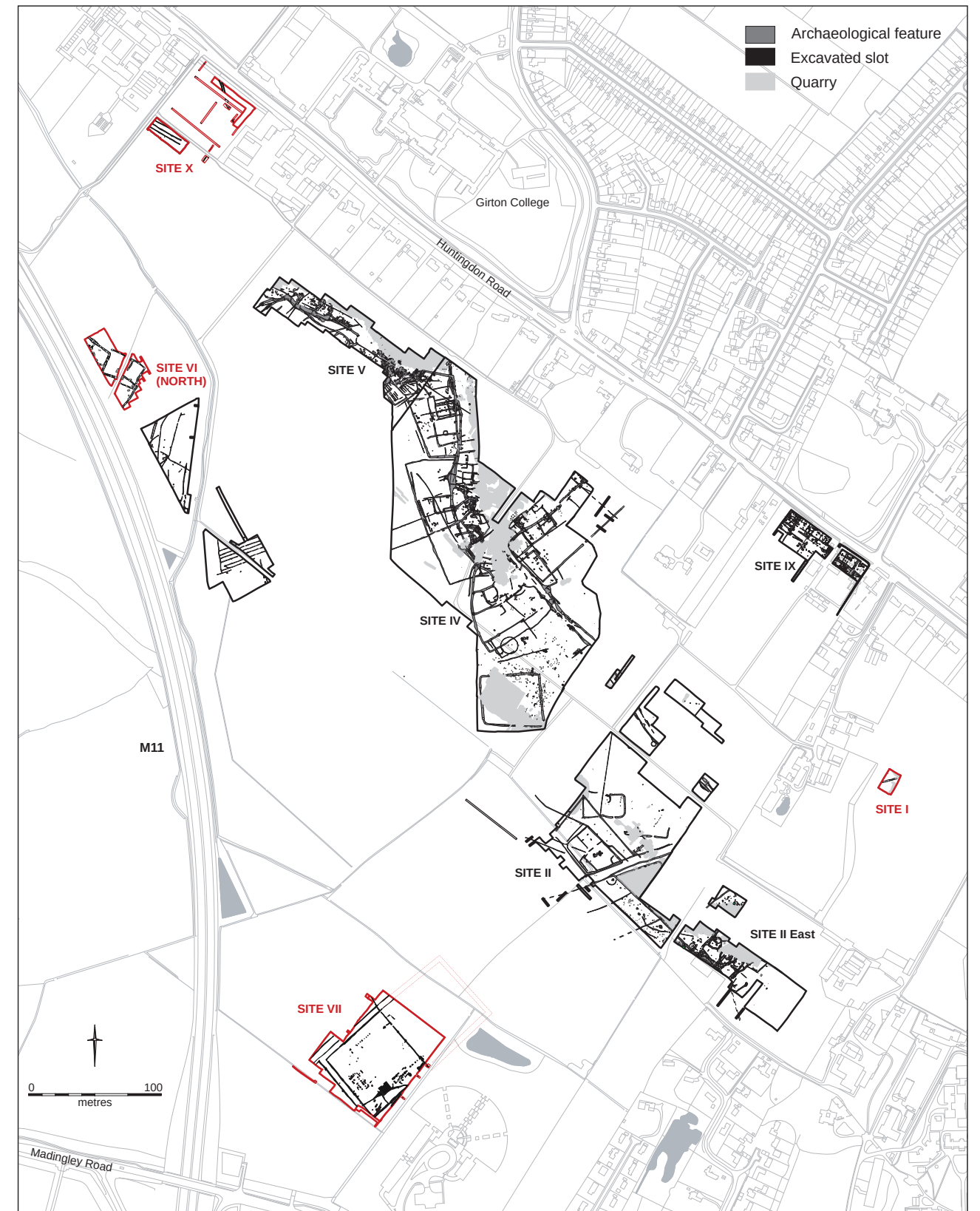


Figure 1. North West Cambridge, Phase 2 sites

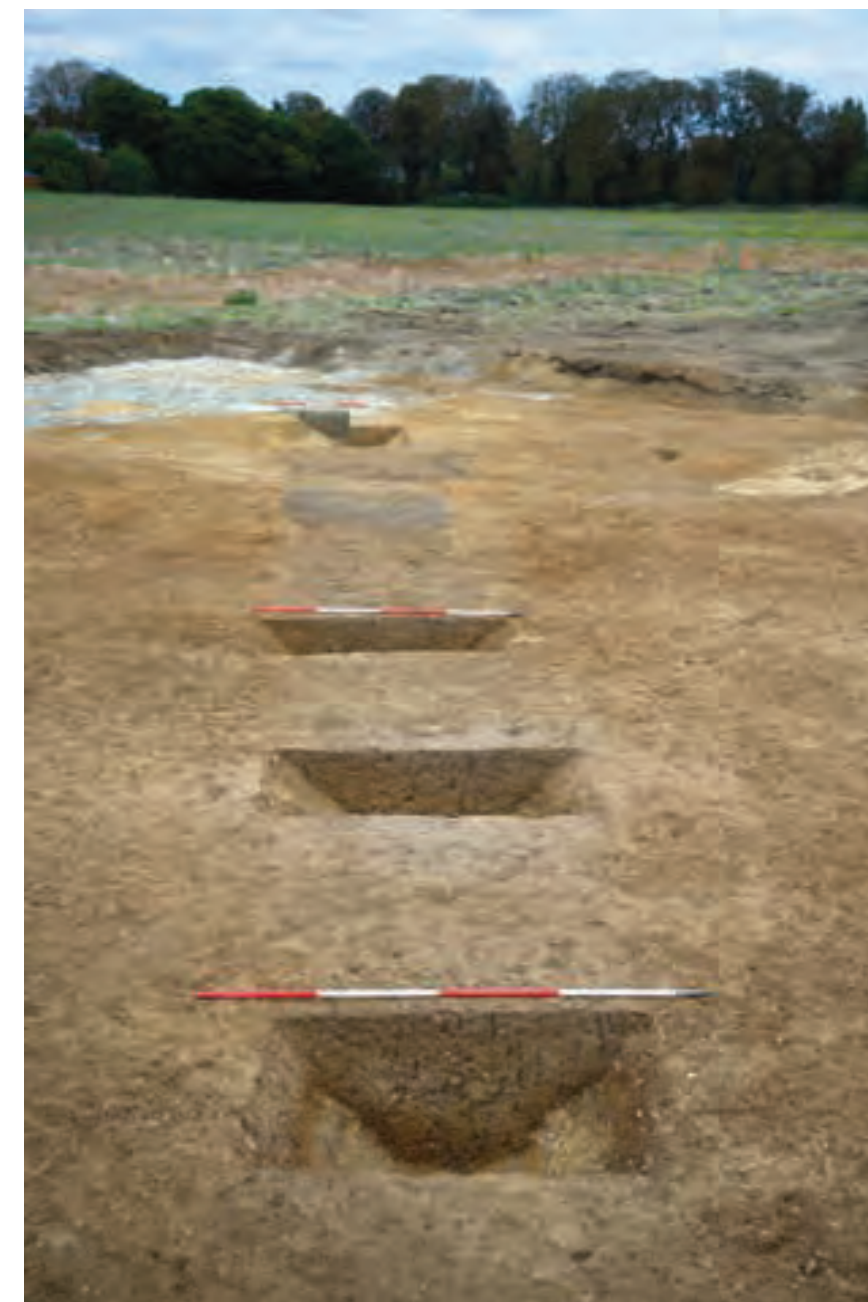
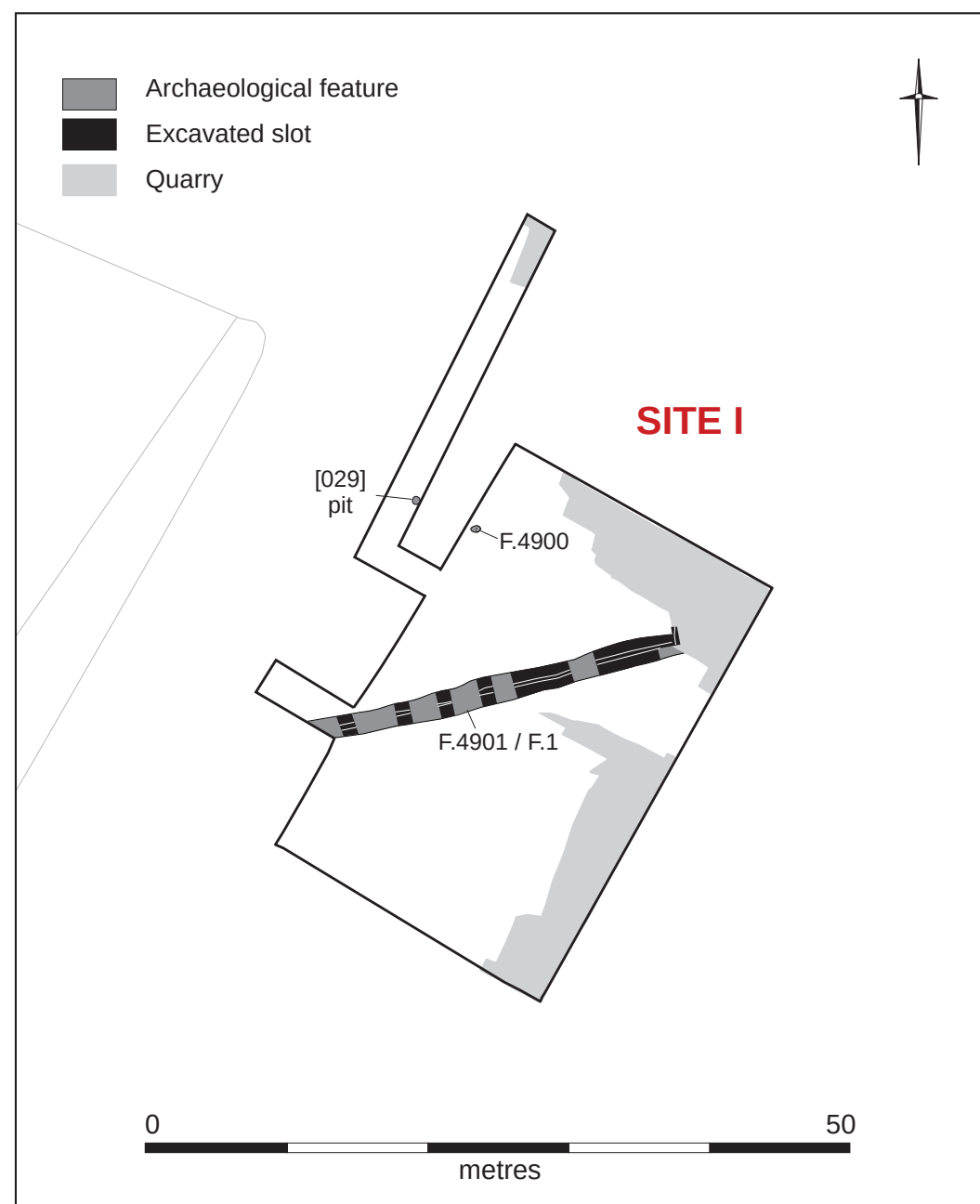


Figure 2. Site I

Specialist Studies

Worked Flint Emma Beadsmoore

A total of 13 (≥77g) flints were recovered, all of which were unburnt and worked and are listed by slot and type in Table 1 below.

Feature/slot	Type					Totals
	chip	secondary flake	tertiary flake	edge used flake	irregular core	
F. 4901, 4306		1	2	1		4
F. 4901, 4307	3	1	1		1	6
F. 4901, 4308		3				3
Sub-totals	3	5	3	1	1	13

Table 1: Flints listed by slot and type.

The assemblage comprises chronological mixed flintworking waste, with just one flint that was visibly utilised. Evidence for Late Mesolithic/earlier Neolithic flintworking was provided by one by-product of systematic flake production/core reduction, characteristic of the period. The remaining material included some potentially Neolithic or later Neolithic/Early Bronze Age working waste, as well expediently manufactured material characteristic of later prehistoric flintworking.

Prehistoric Pottery Sarah Percival

A total of six joining sherds (33g) were collected from F.4901 ([17020]) The sherds are of a dense reduced quartz-rich sandy fabric with oxidised surfaces and are decorated with possible fingernail impressions. A later Iron Age date is likely (350–50BC).

Discussion

Aside from further ‘fixing’ of the Roman road’s route, the excavation further confirmed the scale of prehistoric activity within this area of the gravel ridge, which otherwise was lost to the immediate area’s quarrying. Taking the recovered finds together, apart from documenting a Mesolithic/earlier Neolithic presence, the flintwork tells of later Neolithic/Early Bronze Age activity, with the pottery clearly attesting to a significant Iron Age settlement nearby; the quantity of pottery of that date, belaying the single pit recovered of that attribution.

Site X

Arising from the evaluation findings (Evans and Newman 2010, 212–4), this site was investigated with two aims. One, to excavate what seemed to be a substantial, if irregular, Late Iron Age/Early Roman enclosure boundary (F.75/144 & F.500); the other, to further trace a series of parallel ditches thought possibly to mark the route of the Cambridge-to-Godmanchester Roman road, the *Via Devana* (Fig. 3). In both cases the results were negative.

The would-be enclosure ditch proved, when exposed in plan, to be a stream course. Its profile varied markedly, from c. 1.20–3.90m across and 0.20–.40m deep. With two Late Iron Age/Early Roman sherds recovered in 2009 and, in 2018, seven Early Roman sherds (including two samian, along with a Medieval sherd; see Mazzilli in Evans & Tabor 2018), these finds must have eroded into this feature. As such, it gives insight into the area’s highly active surface-/groundwater ‘hydraulics’.

South of the farmyard track at this point, three parallel ditches – F.4710–12 – lying 4m and 6m apart, had been exposed in the course of evaluation trenching. With almost no artefactual material recovered from them (*ibid.*, 123), by their location and alignment it was thought that they just might mark the *Via Devana* road. Accordingly, in 2018 a 1200sqm area was opened up around them, with the ditches exposed over a c. 50m length (at least the southern two; the northern continued into the edge-of-excavation). Eight further segments were then excavated across their profile. This included two at their eastern terminal ends, with the southern terminal of a northwestward-oriented return – F.4706 – of the middle boundary also slotted. With their ditches having regular/near-uniform profiles – c. 0.75–1.25m across and just 0.15–.30m deep – based on this and their alignments in relationship to other ‘late’ features in the area (Tabor & Evans 2018), it was eventually determined that these must relate to Post-/Late Medieval agriculture. Apart from a few scraps of animal bone and some Post-Medieval metalwork, what seems to be a very abraded later Medieval pottery sherd was recovered.

Discussion

The northern stream course-line provides insights concerning the scale of the immediate area’s ‘hydraulics’ (i.e. seasonal flooding; see also Site V, Brittain 2014). Otherwise, this ‘site’ – both the would-be enclosure and the *Via Devana* route – essentially failed to materialise and, accordingly, the area of excavation was significantly reduced from its original extent.

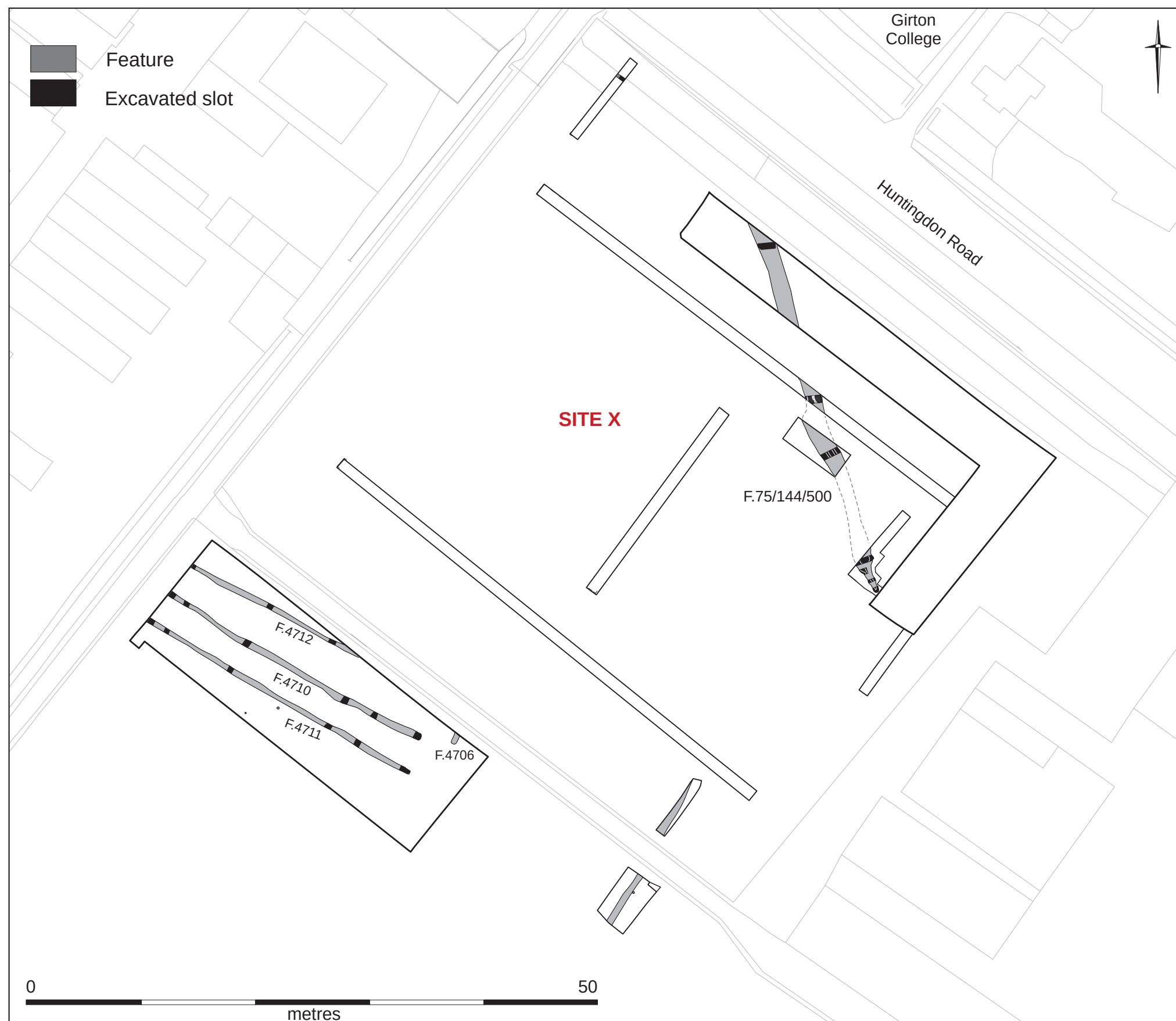


Figure 3. Site X plan

Site VI North

Following the site's initial discovery through evaluation trial trenching (with accompanying geophysical survey; Evans and Newman 2010), due to water-management impeding groundworks, its associated/adjacent fieldsystems were excavated during the 2012–13 campaign. Lacking, however, a specific development-related threat the enclosure-compounds of this Conquest Period settlement were then only further trench-investigated (Timberlake 2014). It was only in 2018, when anticipating Phase 2 of the development's building programme and when the area was slated to have a major acoustic bund built alongside the M11 and across the settlement-area, that the decision was made to progress its excavation. Accordingly, in the autumn of that year, a 0.5ha area was opened (Figs. 4 & 5); this, though, had to be interrupted due to a hedge-line, which at that time still had to be preserved (limiting the western extent of the site's exposure was the line of a high-pressure gas main running alongside the M11).

Located on Gault Clay, the settlement lay relatively high on a rise west of the Wash Pit Brook and, along the site's length, involved a considerable north-to-south slope, from *c.* 16 down to 12.50m OD. It should be stressed that the area's heavy soil matrix was not particularly 'sensitive' and, especially when dry/baked, this greatly impeded the distinction of any recutting.

The partial eastside-only exposure of the settlement's compounds severely curtails its interpretation. This not only involves any secure knowledge of its overall size and layout, but potentially also its sequence. Of the latter, it is conceivable that its origins might lie in earlier, Late Iron Age compounds to the west (e.g. under/beyond the M11), but then its likely that material of that date would still have been present within the excavation area. Equally, any Roman-period components may also have lain beyond the excavation's western limits and have been destroyed with the motorway's construction.

Be this as it may, the discovery of this site provides a telling reflection of evaluation fieldwork techniques and problems of detection on heavy clay geologies. As outlined previously, anticipating the construction of the motorway in 1980, its route was apparently fieldwalked (Haigh 1975) but without the site being found. Having so little/no topsoil-level register (i.e. surface finds), it was only found through large-scale trial trenching.

Settlement Features

Of the three enclosures that could be excavated, only one – C – was fully exposed, making it difficult to be certain of the layout of the other two (Fig. 5). We can, though, be relatively assured that generally the settlement's arrangement was rectangular. Below, the three enclosures and their internal features (mostly pits) will be briefly described. Although all of these features seem to date to a relatively short time span within the Late Iron Age/Conquest Period, it is possible to distinguish different stages within their development based on ditch recuts and 'overlaps'.

Enclosure A

Located in the western half of the site, most of the enclosure's circuit and internal features were lost under the limit of excavation and the M11 to the southwest. Of the conjoining enclosures this saw the most complex development sequence and was probably the earliest of the three. Its original manifestation was represented by F.3224, a 1.08m wide but shallow (0.20m deep) ditch in the northeastern length of the enclosure, which extended for about 3.25m before terminating in the southwest. Slightly to the southwest of its terminal, was a short stretch of ditch, F.3220 (1m wide and 0.20m deep) on a northwest-southeastern alignment and its recut, F.3234 (1.90 wide and 0.3m deep). Perpendicular to ditch F.3224's alignment, in plan this ditch-line and F.3224 seem to have created a southeastern entrance for Enclosure A.

Ditch F.3221 represented a further elaboration of the enclosure. This was wider and deeper than F.3224, at 1m deep and with a width between 2.10m and 4.75m. It had moderately steep straight sides and a concave base with a 'U'-shaped profile. It ran from the northwest to the southeast for *c.* 41m before turning sharply southwest, on the same alignment as F.3224. However, it continued beyond where this earlier ditch terminated, running all the way towards the edge of the excavation in the southwest, thereby closing off any earlier entrance there. This ditch defined the main enclosure, creating a larger space within which the pits lay (see below). It was infilled by light clay derived from natural erosion and contained quantities of pottery (including two almost complete vessels). This fits well with the evidence from the 2009 evaluation, when much pottery was found in the evaluation trench excavated at the point where this ditch turned.

At some point F.3221 seems to have been recut by a narrower and steeper ditch, F.3225. Between 1.50–4.60m wide and *c.* 1m deep, it followed the alignment of F.3221. In contrast to F.3221 it had a 'V'-shaped profile and a dark fill, containing quantities of pottery and a kiln bar.

Enclosure B

This lay located further to the southeast, spanning the western and eastern half of the site. This enclosure may also have been developed in two stages. Ditch F.3226 would then represents the first of these. It started in the western half of the excavation, running northwest-southeast from the southwestern edge of the excavation. It ranged in width between 2.60m and 1.43m, and was 0.90m deep. With moderately steep sides and a concave base, it had a 'U'-shaped profile similar to F.3221 and this could suggest that they may be broadly contemporary. Unfortunately their relationship, and therefore that between Enclosures A and B, was lost under the limit of excavation and the M11.

Feature 3226 appears to have been recut on the same alignment by F.3237, a steeper-sided 'V'-shaped ditch with darker fills. It was 2.30 to 1.35m wide and 0.74m deep, thus resembling F.3225 of Enclosure A and possibly broadly contemporary with it. Feature 3237 may have there continued within the eastern half of the site but not on the same alignment. It may have turned/kinked towards the northeast from the edge of the excavation, running in this direction for *c.* 4m before it turned towards the southeast again. There it could have joined ditch F.3240, which ran for *c.* 25m in this direction before turning towards the southwest, running for another 38.80m towards the southwestern edge of the excavation. Alternatively, the F.3237 and F.3240 may not have conjoined each other and, instead, there was an entrance gap – allowing access between Enclosures B and C – within the unexposed area of hedge-line.

Feature 3242 was a *c.* 18.75m long ditch (0.47–1.42m wide and *c.* 0.20–.40m deep) that ran northwest-southeast to the south of F.3240 in Enclosure B (though on a more southwesterly alignment).



Figure 4. Site VI, looking south with M11 right

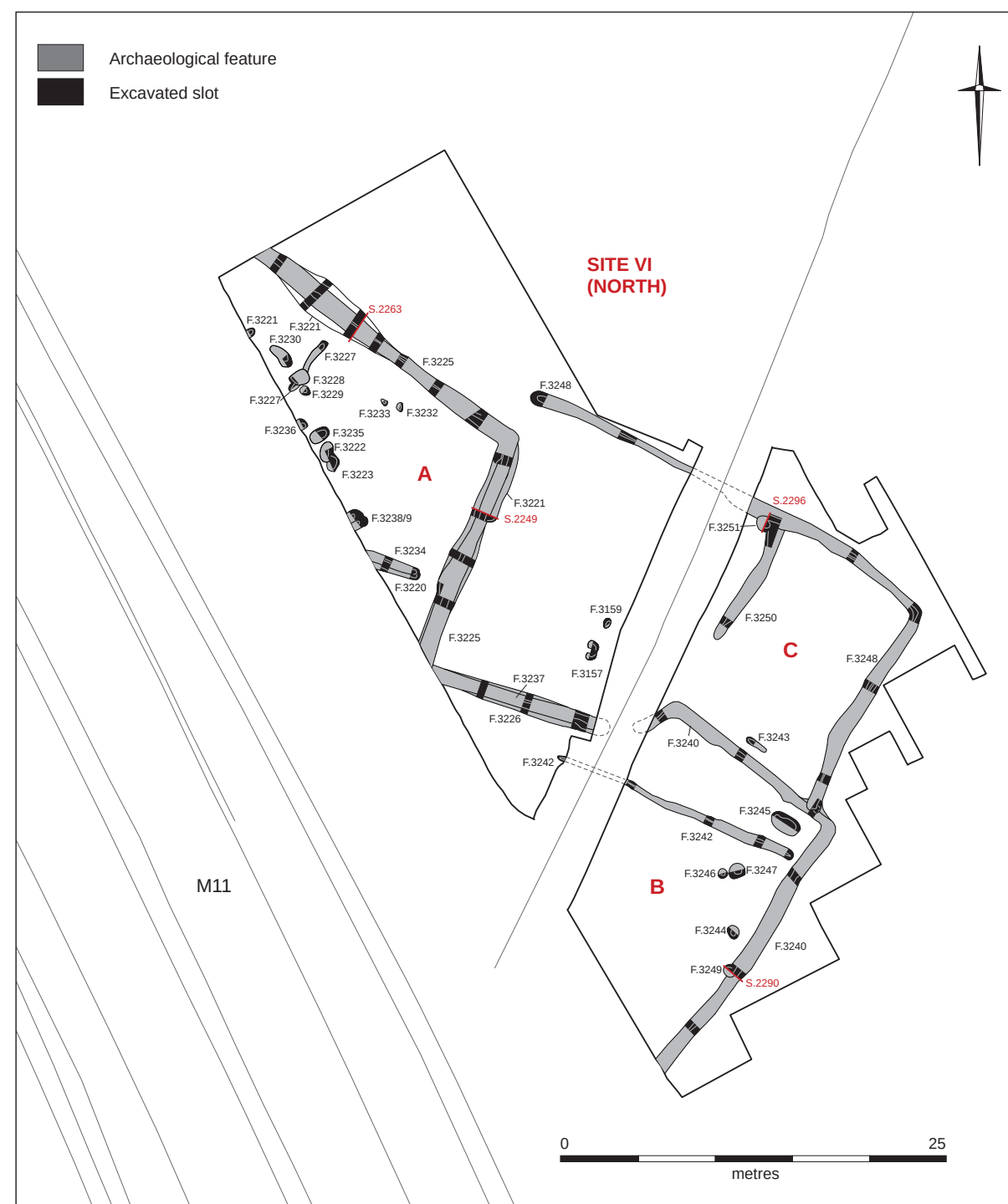


Figure 5. Site VI, base plan

Enclosure C

The final enclosure (C) lay north of Enclosure B and to the east of Enclosure A. It seems to have been an addition to both created by the addition of ditch F.3248 (1–2m wide and 0.62m deep). This cut Enclosure B's F.3240 ditch just before its eastern corner and ran in a northeastern direction for c. 28.75m (parallel to ditch F.3225 of Enclosure A), before it turned sharply towards the northwest. It continued in a more or less straight line (parallel to F. 3243 & F.3237) for c. 57.5m from the eastern half of the excavation into the western portion, where it terminated near the eastern corner of Enclosure A. The resulting rectangular enclosure measured c. 53m by 33.75m. The gap between ditches F.3225 (Enclosure A) and F.3248 (Enclosure C) would have represented the entrance to Enclosure C.

Although there is no evidence of any recut ditches in the eastern half of the excavation, there is evidence for different stages of activity or at least the sequential expansion/addition of the settlement's enclosures. The northwest–southeast stretch of F.3248 seemingly cut a ditch (F.3250) that was aligned perpendicular to F.3248 in a northeast–southwest direction.

Pits and Other Features

There were two short lengths of ditch in addition to the main enclosure boundaries described above. These were F.3227 and F.3231, both located south of F.3225 in Enclosure A, close to the pit groups. Feature 3227 was a short, narrow and shallow ditch (c. 8m long; max. 0.90m wide and 0.14m deep) that terminated at both ends. It was aligned northeast–southwest, parallel to ditch F.3224. It was cut by pit F.3228, suggesting it was an earlier addition to Enclosure A, possibly broadly contemporary with F.3224 and F.3220. Feature 3231 may represent a small ditch terminus on a northeast–southwest alignment at the edge of the excavation that could have been related to F.3227. However, as F.3231 was only exposed over such a short length and, accordingly, could have been a discrete feature, this must remain speculative.

The site contained a number of pits and pit groups. The largest of these groups was a cluster within Enclosure A. The cluster could be roughly divided into four groups based on the proximity of various pits, with three groups of medium-sized pits located along the edge of the excavation and two smaller pits (F.3233 & F.3232) lying closer to boundary ditch F.3225. Most of these pits were probably broadly contemporary based on their dark fills and the Late Iron Age/Conquest Period pottery found within them. Similar to pottery in boundary ditch F.3225 (Enclosure A) and F.3237 (Enclosure B), these pits may have been roughly contemporary with the last stage of Enclosure A and Enclosure B's secondary form.

Enclosure B had two groups of two medium-sized pits located south of ditch F.3242 (F.3236, F.3247, F.3244 & F.3249) and a larger pit, F.3245, located north of this ditch, in the eastern corner of the Enclosure. Pits F.3244 and F.3249 both contained a dark fill, but no pottery. Although they are likely to be of Late Iron Age/Conquest Period date, F.3249 cut the fill of enclosure ditch F.3240, suggesting these pits may have been dug sometime after this boundary ditch. Feature 246 and F.3247 had similar fills as these pits and were probably broadly contemporary. Shallow pit F.3245 was slightly larger than these pits, and contained pottery, bone and burnt stone.

Enclosure C had a small group of three pits – F.3157–59 – located just north of ditch F.3237 near the hedge-line. These pits were half-sectioned in the 2013–14 trenching and contained Late Iron Age pottery (Timberlake 2014). A large pit, F.3251, was found where enclosure ditch F.3248 cut ditch F.3250. This pit seems to have come after ditch F.3250, but prior to enclosure ditch F.3248. It may, therefore, predate Enclosure C. The pit contained a fragmented Late Iron Age-type vessel and a quernstone fragment (SF.1313) that refits with the fragment found in the subsoil above ditch F.3248 (see Timberlake below).

Specialist Studies

Apart from those finds described below, five worked flints and single pieces of shell and tile were recovered.

Pottery Sarah Percival

A total of 1042 sherds (9,975g) were collected from 23 features (EVE 4.6; Table 2). The assemblage almost all dates to the Conquest Period, around 50–80AD, and is moderately to poorly preserved with a mean sherd weight of 9g, with some sherds being small and abraded whilst others are large and fresh. The assemblage is largely comprised of wheelmade coarse jar forms, with very little fine ware and no imported wares. A single scrap of flint-tempered pottery from fill [11137] of shallow linear F.3242 may be of Post-Deverel Rimbury date.

The assemblage was analysed in accordance with the guidelines for analysis and publication laid down by the Prehistoric Ceramic Research Group (PCRG 2010). The total assemblage was studied and a full catalogue prepared. The sherds were examined using a hand lens (x20 magnification) and were divided into fabric groups defined on the basis of inclusion types. Fabric codes follow those used by CAU for recording Later Iron Age and Roman fabrics at Northstowe. Vessel form was recorded: R representing rim sherds, B representing base sherds, D representing decorated sherds and U representing undecorated body sherds. The sherds were counted and weighed to the nearest whole gram. Decoration, condition, food residues and sooting were also noted.

Fabric

The assemblage is predominantly sandy with sand-rich fabrics forming 89% of the total assemblage by weight. A further 9% are grog-tempered and the remaining 1% contains fossil shell. Within the sandy-tempered group the most common fabrics are unsourced sandwich wares characterised by dark grey brown cores with red margins and reduced or oxidised surfaces (Table 2; Q1 & Q1B). These compare well with contemporary examples from Addenbrooke’s (Webley & Anderson 2008, Fabric Q2) and the Traveller’s Rest Sub-site’s excavations (Sealy forthcoming Fabric S3). Variations within the sandy group include a sandwich ware with sparse flint inclusions (Q5), and a reduced sandy fabric (REDUS). Reduced sandy sherds are found at Travellers Rest (Sealy forthcoming Fabrics S1 & S2) appearing only in the Late Iron Age but are absent from Addenbrooke’s, though the sandy reduced fabric with flint is present there within the Late Iron Age assemblage (Webley & Anderson 2008, Fabric Q1).

Transitional Late Iron Age to Early Roman fabrics are present in small quantities including proto- or early sandy greywares (ESGW) some with slipped surfaces (ESGWSLIP) and sandy oxidised wares, some with gold mica inclusions (SOW & SOWM). These fabrics are found alongside transitional sandy sandwich ware at Addenbrooke’s in contexts dated AD50–80.

A limited quantity of grog-tempered sherds was recovered forming approximately 10% of the total assemblage. These mostly contain abundant, small angular well-sorted dark grey grog (EGROG) but include a fine version with smaller inclusions, used for a single bowl (Thompson 1982, Form G1-6), and a sandy fabric containing sparse medium pale grog pieces (EGROG fine and Q1grog). The mean sherd weights for the grog-tempered sherds are larger than those for the sandy fabrics as grogged fabrics were often used for the more robust vessels, such as storage jars. Grog-tempered sherds are a component of most Later Iron Age assemblages in the region, for example forming the fourth most abundant fabric within the Late Iron Age assemblage at Loves Farm (Lyons & Percival 2018), and around 10% of the assemblage at Traveller’s Rest Sub-site (Sealy forthcoming).

The paucity of shell-tempered fabrics matches that seen within the contemporary pottery from the adjacent site at Travellers Rest (Sealy forthcoming) and may be interpreted as representing a local import perhaps originating from the fossil shell rich Jurassic clays of west Cambridgeshire.

The assemblage includes a very small quantity of fineware (2.44% of the total assemblage); all locally produced ,with no imported fabrics present (Table 2).

The predominance of sandy wares, particularly the coarse ‘sandwich’ wares which form over 55% of the total assemblage by weight is typical of Cambridgeshire’s Late Iron Age ‘Romanising’ assemblages (i.e. Conquest Period; Monteil 2013, 93) being the products of unsourced, local, low-fired kilns (Gibson & Lucas 2002, 124). The low number of finewares is also characteristic of contemporary rural assemblages from the region perhaps due to a lack of access to or reluctance to adopt new vessel forms.

Fabric group	Fabric type	Description	Sherd count	Sherd wt. (g)	ASW (g)
SANDY	Q1	Unsourced medium sandy fabric with frequent fine quartz. Sandwich-fired grey core oxidised edges black surface.	335	3072	9
	Q1B	Unsourced medium sandy fabric with frequent fine quartz. Sandwich-fired grey core oxidised surface	313	2462	8
	RDUS	Unsourced sandy fabric with frequent fine quartz. Reduced throughout	112	1545	14
	Q5	Unsourced coarse sandy fabric with rare coarse flint >4mm	52	719	14
	Q1SH	Unsourced medium sandy fabric with frequent fine quartz and moderate fine to medium shell or voids	35	624	18
	ESGW	Early sandy greyware	28	289	10
	FSGW	Fine sandy greyware	73	114	2
	SOX	Sandy oxidised ware	11	73	7
	FSOX	Fine sandy oxidised ware	5	17	3
	Q4	Unsourced medium sandy fabric with frequent silver mica	1	16	16
	FWW	Fine white ware. Unsourced	3	13	13
	SOXgold mica	Sandy oxidised ware with moderate gold mica	1	5	5
	ESGWSLIP	Early sandy greyware with dark slipped surface	1	5	5
	RDUSM	Unsourced sandy fabric with frequent fine quartz. Reduced throughout with some mica	1	4	4
	WW	Unsourced white ware	3	2	1
GROG	EGROG	Early grog-tempered with common medium angular grey grog	22	721	33
	Fine EGROG	Early grog-tempered with common fine pale grog	25	130	5
	Q1GROG	Unsourced medium sandy fabric with moderate medium grog	5	39	8
SHELL	ESHELL	Early shell with common medium shell clay matrix	14	115	8
	Q1SH	Unsourced medium sandy fabric with common medium shell	1	8	8
Total			1041	9973	

Table 2: Quantity and weight of pottery by fabric.

Form and Decoration

The assemblage is largely composed of coarse ware forms all wheel-thrown or slow- wheel-finished. Most commonly represented are bead rim jar/bowls, often with combed surfaces (Thompson 1982, Forms C1-1 and C1-2; EVE 1.06; Sealy forthcoming fig. #; 36) and plain everted rim jars (Thompson 1982, Form B1-1; EVE 1.00). These vessels have rim diameters of between 120 and 290mm, with a median diameter of 160mm.

A distinctive rilled jar in sandy reduced ware is also present (Thompson 1982, Form C7-1; EVE 0.82), these are very similar to mid/Late Iron Age vessels also in sandy fabrics found, and, probably made, at the Hutchinson Site, Addenbrooke’s (Evans *et al.* 2008, fig. 2.29, 14 & 15; Sealy forthcoming fig. 31). These jars appear to have been of similar size to the everted rim bead rim jars and also have a median rim diameter of 160mm. One base sherd has been re-fired causing blistering and lamination suggesting exposure to heat during cooking, and several examples have sooting to the exterior suggesting that these vessels were used as cooking pots.

Cordoned jar/bowl forms are also common (EVE1.15), including some with bulges between cordons on the shoulder (Thompson 1982, Form B3-1; EVE0.02) and some with a cordon high under the rim (Form B3-3; EVE 0.15). Ripple-necked or corrugated jars are often represented by body sherds, but include a rim from a rounded ripple-necked vessel similar to examples found at Traveller’s Rest (Sealy forthcoming, fig. 38; EVE 0.12) and also found at the Hutchinson Site (Evans *et al.* 2008, fig. 2.28, 6 & 8). The cordoned and corrugated vessels are almost all made in sandy fabrics with just two examples being grog-tempered. Size ranges from 160mm to 200mm diameter at the rim.

At least three large storage vessels are present alongside the abundant medium jars forms. These are represented by robust body sherds and unlike the universally sandy medium everted rim and bead rim jars are found in a variety of fabrics including a handmade coarse grog-tempered fabric and a wheelmade cordoned example in sandy fabric with shell.

A small quantity of finewares was recovered. These include a complete profile of a grog-tempered copy of Gallo-Belgic dish (Form Cam.7/8; Thompson 1982, Form G1-6; compact dishes with deep offset vertical wall and internal moulding) and some very small fragments from rouletted and impressed possible Girth and Butt Beakers, again local copies rather than imports (Thompson 1982, G5-2, G5-6 and G4). Montiel notes when discussing the Late Iron Age and Early Roman pottery from Colne Fen that first century AD rural assemblages from the region often contain a mix of coarse cooking and storage jars alongside drinking vessels and it appears that the Site VI assemblage fits this typical assemblage profile (Montiel 2013, 95).

Deposition

The majority of the pottery was recovered from the ditches, which produced 82% of the total assemblage by weight (Table 3). The remainder of the pottery came from pit fills. The pottery was not evenly distributed across the ditches. While most assemblages were fairly small and scrappy, a notable one was retrieved from slot 2249 in ditch F.3225 (the secondary phase of Enclosure A). This assemblage comprised 110 sherds (1238g) and includes a fragment of possible Butt Beaker and the grog-tempered dish profile (Thompson 1982, Form G1-6) alongside sherds from at least six further vessels. Slot 2250 in ditch F.3221, which also formed part of the second version of Enclosure A, contained a dump of two semi-complete cordoned/corrugated bead rim jars (86 sherds, 573g). Other possible dumps of substantially complete vessels include large sherds from several rilled jars in slot 2263 of F.3221, part of Enclosure A (31 sherds, 502g) and probably contemporary dump of large sherds from a near identical vessel from pit F.3222 part of Pit Group 2 (45 sherds, 533g).

Feature group	Feature type	Feature r	Sherd c	Sherd Wei	% Weight	MSW
Encl. A	Ditch	3220	1	4	0.04%	4
		3234	4	114	1.14%	29
	Ditch	3221	219	2170	21.75%	10
	Ditch	3225	174	1857	18.62%	11
Encl. B	Ditch	3226	38	360	3.61%	9
	Ditch	3237	59	774	7.76%	13
	Ditch	3240	48	236	2.37%	5
	Ditch	3242	26	172	1.72%	7
Pit Group 1	Pit	3228	4	98	0.98%	25
	Pit	3230	6	372	3.73%	62
Pit Group 2	Pit	3222	45	533	5.34%	12
	Pit	3223	4	11	0.11%	3
	Pit	3235	1	10	0.10%	10
	Pit	3236	2	53	0.53%	27
Pit Group 4	Pit	3239	2	5	0.05%	3
	Pit	3238	3	65	0.65%	22
	Pit	3233	1	7	0.07%	7
Encl. C	Ditch	3248	267	1909	19.14%	7
	Ditch	3250	106	727	7.29%	7
	Linear/Pit	3243	1	12	0.12%	12
	Pit	3245	8	31	0.31%	4
	Pit	3246	2	4	0.04%	2
	Pit	3251	21	451	4.52%	21
Total			1042	9975	100.00%	10

Table 3: Quantity, weight and mean sherd weight of pottery by feature.

The excavated assemblage appears to be a fairly tightly dated group dating to the late first century AD and is consistent with the pottery recovered during evaluation (Anderson 2010). No mid/late Iron Age handmade pottery was present at the site. Nor does the pottery appear to continue into the fully Roman period, with developed greywares and associated forms also being absent. The third to fourth century coin found in pit F.3236 is not contemporary with the transitional sandy sandwich wares also recovered from the pit and may, therefore, be intrusive.

The utilitarian jar forms, comprising unsourced, probably locally made, medium jars in a sandy fabric, were used for cooking, with the larger sandy-, grog- and shell-tempered vessels used for storage; whilst the scraps of locally made beakers represent the drinking vessels. Despite the presence of both ripple- or corrugated-necked jars and cordoned vessels alongside the coarse rilled jars this pottery should probably not be considered as being a Aylesford-Swarling assemblage as suggested for Traveller’s Rest (Sealy forthcoming), insofar as it lacks the finely made vessels and, in particular, the pedestal jars that define that style, and which were present, if only in in small numbers, at Traveller’s Rest. Instead, it should

probably be considered as being ‘Aylesford-Swarling influenced’, having adopting a limited range of attributes, including the use of cordons and rippled-necked vessels. The composition of the assemblage compares well with other late first century AD assemblages from Cambridgeshire, being principally composed of a restricted range of coarse jars supplemented with limited fine ware mostly drinking vessels and appears typical of rural transitional Late Iron Age/Early Roman pottery broadly dating to c. 50–80AD.

Metalwork Justin Wiles

Despite the site’s intense metal-detecting, just three copper alloy items were recovered. Of the eight iron pieces, at least two were probably Post-Medieval.

Copper Alloy

<249> *S.F. 1300.* - A *Nummus* (AE3) No detail remains on the obverse but wolf and twins are just visible on reverse (Sear 1981, 316). Diameter 18mm, weight 1.42g. AD 330–340.

<251> *S.F. 1302* - A bracelet or armlet fragment curved and tapering at one end. Decorated with a central transverse panel with parallel grooves on either side. The decoration is only present at the tapering terminal (Crummy 1983, 37). Length 41mm, width 14mm, weight 6.3g. Roman, probably late third to fourth century in date.

<263> [11133], *F.3245* - A small fragment of copper alloy, curved, with a raised zig-zag pattern between two parallel lines. Probable fragment of finger ring. 10x4mm, 0.16g. Probable Roman date.

Iron

<250> *S.F. 1301. F.3227* ([11071]) - A near-complete nail with rectangular sectioned shank and square head. Length 29mm, shank at widest point 7x5mm, weight 4.3g. Probable Roman date.

<252> *S.F. 1303* Subsoil - A circular washer or structural fitting with triangular cross section and sub-square aperture 17mm in diameter. Overall diameter 37mm, weight 21.9g. Post-Medieval in date.

<253> *S.F. 1304* - A length of chain, comprising of 45 oval-shaped links with circular cross-section. Individual link dimensions are 28 x 18 x 5mm. Overall length 810mm, weight 492g. Very little corrosion, Post-Medieval in date.

<254> *S.F. 1305* Subsoil - A near-complete nail with square sectioned shank and square head. Length 40mm, shank at widest point 4mm, weight 4.5g. Probable Roman date.

<255> *S.F. No. 1306* Subsoil - A near-complete nail with circular sectioned shank and circular head. Length 23mm, shank diameter 4.6g. Probable Roman date.

<256> *S.F. 1307* Subsoil - A near-complete nail with square sectioned shank and pyramidal head. Length 28mm, shank at widest point 4mm, weight 2.9g. Probable Roman date.

<259> *S.F. 1310* - A near-complete nail with rectangular sectioned shank and irregular head. Length 44mm, shank at widest point 5x4mm, weight 2.7g. Probable Roman date.

<260> *S.F. 1311* Subsoil - A near-complete nail with square sectioned shank and irregular head. Length 34mm, shank at widest 4mm, weight 1.8g. Probable Roman date.

Fired and Worked Clay Marcus Brittain and Floor Huisman

A small assemblage consisting of 26 fragments (693g) of worked clay was found in addition to a further 136 fragments (678g) of undiagnostic fired clay and daub (Tables 4 & 5). Highlights amongst the worked clay are a number of items of kiln furniture, including two fragments of kiln bar, circular plates from three contexts, and at least two examples of cylindrical ‘feet’ or pedestal spacers.

Thirteen fabrics were identified, ranging from hard, fine silty clays with a relatively smooth texture to softer, coarser and crumblier sandy clays. These are comparable to fired clay fabrics noted elsewhere at North West Cambridge (Timberlake 2015). Pinkish buff colours dominate the assemblage, though many pieces have a variegated mottled appearance, with colours ranging from light pink/buff to dark grey and black. The kiln furniture pieces were made with Fabrics 2, 8 and 13; daub occurred mainly in Fabric 1, whereas less diagnostic materials were more varied by their fabric range.

Fabric 1: Hard, fine silty clay with occasional large white lumps (chalk?) and grog and organic inclusions and a lumpy interior; mottled pinkish to yellowish buff exterior and dark to light grey (mottled) interior.

Fabric 2: Hard, fine silty clay with very large chunks of flint, smaller flint and grog inclusions and very small voids. Irregular, rough interior and smoother exterior; mottled reddish pink colour.

Fabric 3: Crumbly soft, fine sandy clay with frequent small grog inclusions and small voids; orangey pink to buff exterior and reddish-brownish grey to black interior.

Fabric 4: Medium-hard, fine silty clay with grog and organic inclusions and voids from burnt-out organics. Irregular interior with smoother exterior; greyish brown to buff colour.

Fabric 5: Medium-hard fine silty clay with frequent grog and grit inclusions and swirls/smears of lighter grey clay. Slightly pitted surface with some voids; pinkish/yellowish light to slightly darker grey.

Fabric 6: Medium hard, fine silty clay with voids from burnt-out organics without inclusions; white to light grey.

Fabric 7: Soft, crumbly sandy clay with frequent grog inclusions and some small voids; pink to buff exterior and grey interior.

Fabric 8: Hard, sandy clay with frequent small grog and grit inclusions and occasional large chunks of flint; reddish pink/buff to brownish grey in colour.

Fabric 9: Hard, fine silty clay with occasional with large chunks of flint, and frequent small voids, grog and grit inclusions. Reddish pink exterior and dark grey interior.

Fabric 10: Soft, crumbly sandy silt with occasional grog and grit and rare organic inclusions and small voids; mottled pale, yellowish buff to reddish pink and grey.

Fabric 11: Soft, silty clay with some grog, grit and occasional shell inclusions and many small voids; orangey brown.

Fabric 12: Hard sandy clay with very small grit inclusions and tiny voids; orangey pink.

Fabric 13: Hard, fine silty clay with slight ‘soapy’ texture. Reduced grey interior and slightly pinkish exterior, with occasional inclusions of small coarse grit.

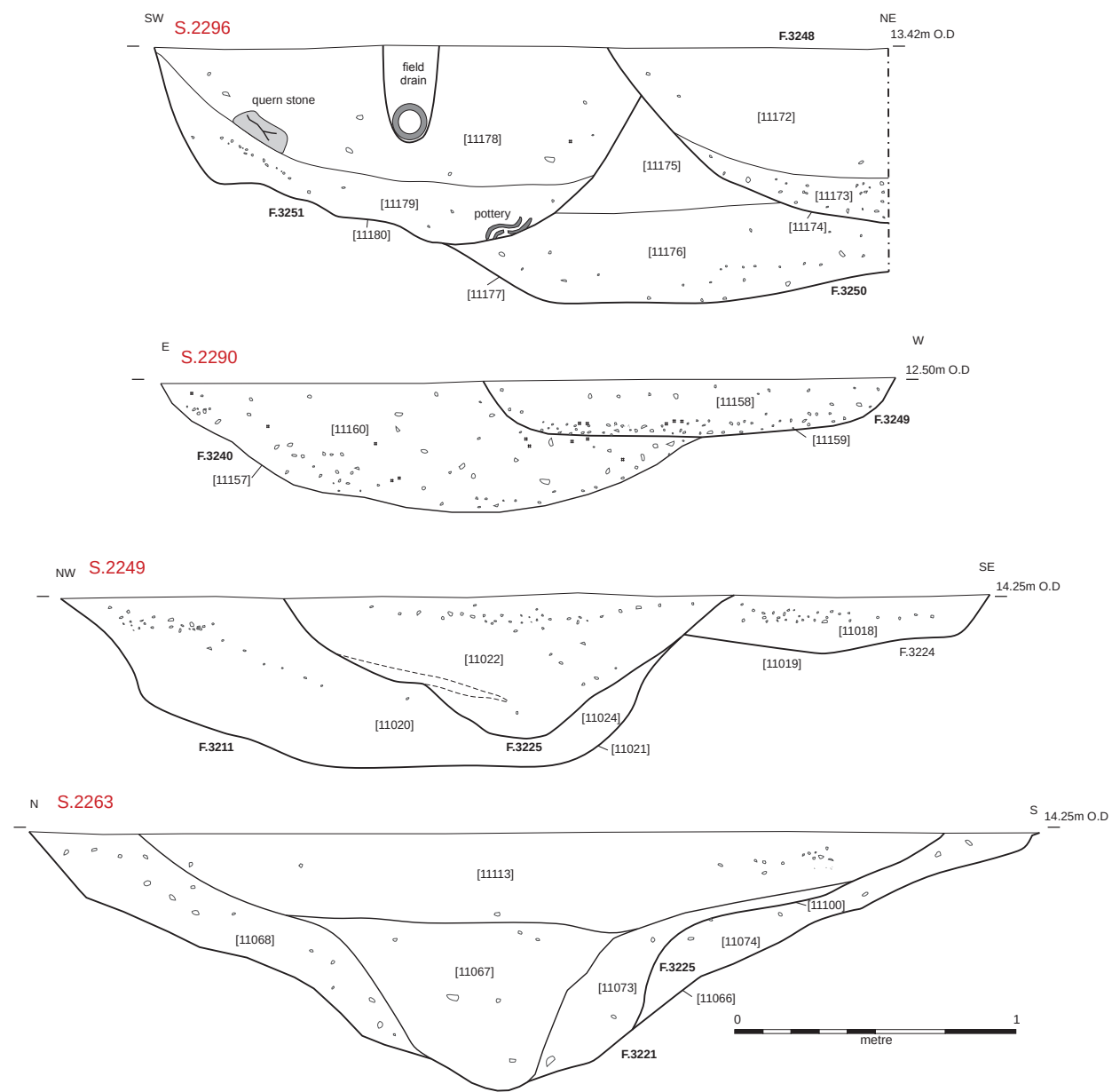
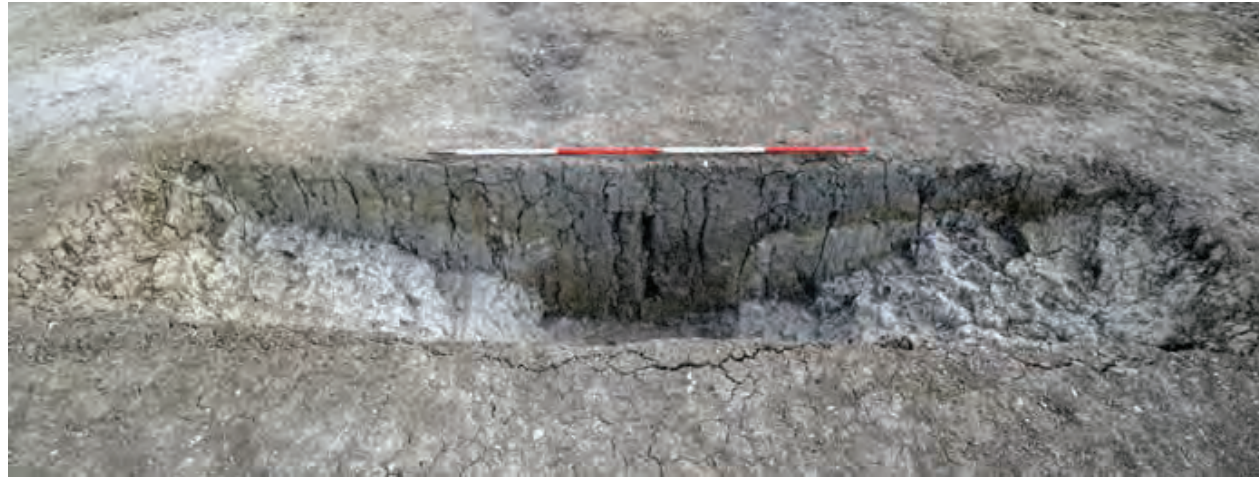


Figure 6. Sections, top photograph F.3225 looking south

Cat. No.	Feature	Context	Slot	Qty	Wt. (g)	Dimensions	Fabrics	Description
105	3221	11020	2249	1	103	47x41x40mm	13	Kiln bar fragment; sub-square section, folded from a flat wet clay tablet. Edges slightly rounded. One end is flattened; possible hint of tapered form expanding towards broken end.
278	3221	11078	2266	4	142	See description	8	Four refitting fragments of a (partial) sub-circular plate c. 185mm diameter. Both upper and lower surfaces are flat; one is slightly reddened, the other with a greyish hue. The outer edge has been folded and kneaded to a rough finish. Thickness at outer edge is 20mm, thickening to 25mm towards the centre.
136	3222	11045	2257	8	110	See description	8	Fragments of a sub-circular plate c. 190-195mm diameter. Four fragments refit to give proportions: 18mm thick at edge, to 24mm thickness towards centre. The outer edge has been flattened to a smooth finish. Both upper and lower surfaces are flat; one is slightly reddened, the other being a pinkish-grey. The horizontal fracturing suggests that the plate was formed of folded (or applied) clay, rather than a single moulded piece.
279	3225	11080	2266	1	34	18mm thick	8	Fragment of one flat (grey) surface of cylindrical plate.
160	3226	11025	2251	1	43	See description	2	Fragment of cylindrical foot or pedestal support, with flat circular base c. 55mm diameter with slightly flared (pinched) edge to near vertical straight sides (c. 45-50mm diameter, surviving only to 45mm height). Fabric contains occasional moderate to large flint (no grog) or voids thereof. Outer surface is pitted with impressions of vegetable (grass?) matter.
160	3226	11025	2251	1	45	See description	13	Arched profile c.45mm wide on flat edge, and 30mm at tallest point of arc. Clay possibly moulded to a cylindrical bar with one flat surface. Possible kiln furniture.
163	3226	11026	2251	9	154	Lg: 61x47x32mm Sm: 23x16x7mm	2	Slightly irregular medium sized fragments with arched and curved smooth surfaces. Though fragmentary, these are the same fabric as Cat. No. 160 cylindrical object, and have a similar curvature.
246	3250	1176	2296	1	62	See description	2	Fragment of cylindrical foot or pedestal support, with flat circular base c. 50-55mm diameter with sharp edge to near vertical slightly irregular sides (surviving only to 57mm height). Fabric contains occasional moderate to large flint (no grog) or voids thereof. Outer surface is pitted with impressions of vegetable (grass?) matter.

Table 4. Worked clay kiln furniture.

Cat. No.	Feature	Context	Slot	Qty	Wt. (g)	Dimensions	Fabrics	Description
106	3221	11020	2249	3	6	Lg: 30x12x8mm	7	Undiagnostic
125	3221	11078	2266	11	70	Lg: 46x43x23mm Sm: 18x11x6mm	2,4	Undiagnostic
130	3222	11013	2248	22	96	Lg: 56x26x17mm Sm: 12x11x7mm	1	Undiagnostic
133	3222	11014	2248	9	43	Lg: 48x32x22mm Sm: 18x11x5mm	2,3,9	Undiagnostic
137	3222	11045	2257	8	21	Lg: 31x16x13mm Sm: 21x12x8mm	2,3,7	Undiagnostic
141	3225	11022	2249	1	8	7mm thick	1	Daub with 3mm-wide wattle impression on one side.
141	3225	11022	2249	13	172	Lg: 72x60x33mm Sm: 16x16x14mm	3,4,6	Undiagnostic
148	3225	11080	2266	15	40	Lg: 37x25x15mm Sm: 16x11x5mm	5,7,10	Undiagnostic
279	3225	11080	2266	1	6	+11mm thick	1	Undiagnostic
279	3225	11080	2266	3	11	4-15mm thick	5	Undiagnostic
159	3226	11025	2251	1	3	7mm thick	1	Daub with 3mm-wide wattle impression on one side.
159	3226	11025	2251	14	39	Lg: 35x13x23mm Sm: 13x8x5mm	5,7,9,11	Undiagnostic
160	3226	11025	2251	2	60	See description	2	One piece (20mm thick) has a flat surface (36x70mm) pitted with vegetable (grass?) matter; the other is an undiagnostic lump.
193	3240	11131	2280	2	9	Lg: 30x23x15 Sm: 14x14x11	3	Undiagnostic
198	3240	11160	2290	1	3	20x15x11mm	7	Undiagnostic
210	3242	11137	2280	1	2	7mm thick	1	Daub with 5mm-wide wattle impression on one side.
210	3242	11137	2280	5	6	Lg: 22x13x12mm Sm: 9x7x5mm	1,2	Undiagnostic
211	3242	11151	2288	18	25	Lg: 28x21x7mm Sm: 12x7x3mm	1	Undiagnostic
213	3243	11121	2276	1	2	16x11x9mm	1,2	Undiagnostic
229	3248	11173	2296	1	3	10mm diam.	8	Undiagnostic
246	3250	11176	2296	3	48	Sm: 28x26x12mm Lg: 58x45x34mm	13	Thick undiagnostic pieces in fabric similar to kiln material
246	3250	11176	2296	1	5	28x25x11mm	3	Undiagnostic

Table 5. Daub and undiagnostic fired clay.

Kiln Furniture

Although no kilns as such were encountered within Site VI, seven contexts from five features produced items of kiln furniture (Fig. 7).

There was at least one fragment of rectangular kiln bar from ditch F.3221 (Cat No. 105) with a square-section tapering slightly towards one end, its edges slightly rounded or folded, and a possible second kiln bar of an arched form with flat base from ditch F.3226 (Cat No. 160), both in Fabric 13. The nearest comparable examples are from a first/second century AD kiln recently excavated at the University Sports Ground (Brittain & Evans 2018), from where eight bars were recorded. These were manufactured in one of two fabrics; one of these matches the description of Fabric 13. The longest surviving bar was 21cm, and the dimensions of the bars' square sections were similar to those of the Site VI bar (40-45mm).

Plates and cylindrical objects were also present. Three features produced fragments of plain ceramic plates: ditches F.3221 (Cat No. 278) and F.3225 (Cat No. 279), and small pit or hollow F.3222 (Cat No. 136). Though fragmentary, the diameter of the plates may be determined in the region of 185-195mm, and each was manufactured in Fabric 8 – a harder well-fired and oxidised clay than the other kiln furniture. These have a slightly irregular sub-circular shape with an elliptical profile and either pinched, folded or smoothed edges. Plates are common amongst kiln furniture assemblages (Swan 1984, 41), and have been noted in other Late Iron Age to Early Roman Cambridge-region kilns. They tend to average 150-300mm in diameter (*ibid.*, 64), but the Site VI plates were notably thicker and coarser than the plates identified at the University Sports Ground kiln (Brittain & Evans 2018, 36) and also at the Horningsea kiln site (Evans *et al.* 2017). They are thought to purpose a function similar to stackers or setters, both separating and supporting vessels within the kiln oven (Halkon and Millett 1999, 123), although their alternative use as heat retainers laid over a turf dome over a vessel stack has also been proposed for the Horningsea and Waterbeach kilns (Evans *et al.* 2017; Walker 1913, 47).

Less clear regional parallels are available for the (at least) two cylindrical objects recovered from ditches F.3226 (Cat Nos. 160 & 163) and F.3250 (Cat No. 246). Each produced in Fabric 2, these had flat circular bases upwards of 55mm in diameter with straight sides, though surviving to no more than 45mm and 57mm height, respectively. Slight flared pinching was noted on the edge of one base, although the other had a sharp finish. Vegetable matter, possibly grass, was visible as impressions within the objects' outer surface. Similar items have not been registered in the local kiln repertoire, though these may have served as supports in a way that has been suggested for bi-pronged (or 'horned') bars that would have been set in an upright position to hold either plates or vessels held rim-down during the firing process. Further afield, items of a similar appearance have been found from a third century kiln at Alice Holt Forest in Hampshire (Birbeck *et al.* 2008). These were preserved up to 95mm in length and showed a gradually tapering rounded profile. They were considered as being either trivets or gridirons (in effect, another form of spacer).

Burnt and Worked Stone Simon Timberlake

Approximately 7.1kg (39 pieces) of burnt stone were recovered from the 2018 excavations. The main distribution of this very small amount of burnt stone came from F.3244 (2.27kg; 6 pieces), F.3250 (1.85kg; 5 pieces), F.3248 (1.43kg; 10 pieces) and F.3225 (0.43kg; 3 pieces).

This moderate-sized assemblage appears to be fairly typical of prehistoric burnt stone such as we find associated with pit and ditch fills associated with settlement areas and domestic cooking refuse and midden deposition (Table 6). However, the current material does not particularly show the distinctive characteristics of Iron Age burnt stone (notable here is the absence of re-use of broken-up and discarded saddlequern as a stone resource).

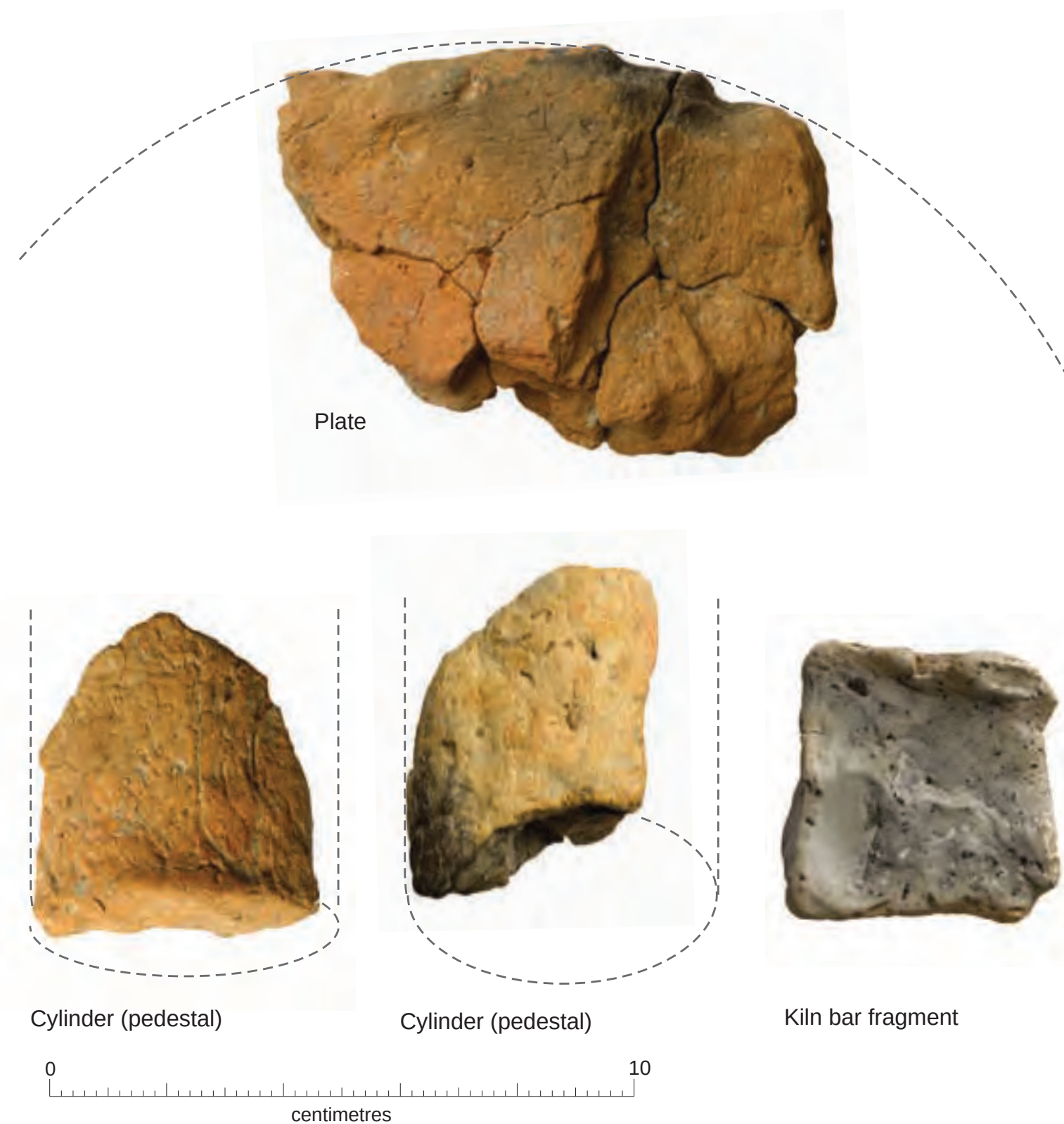
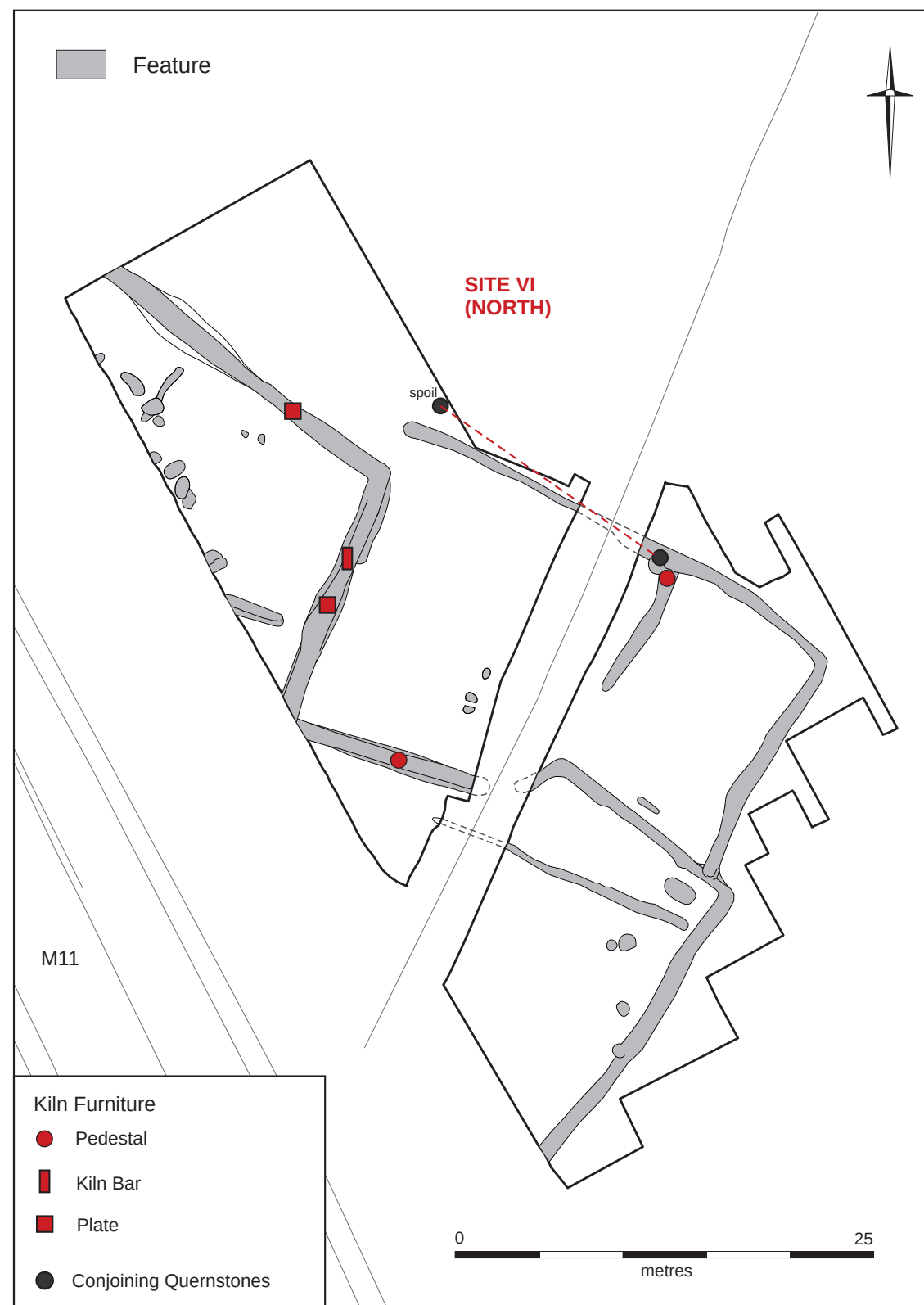


Figure 7. Kiln furniture, with distribution plan (including quernstone fragments)

The composition of this assemblage of burnt stone fairly well reflects the glacial erratic stone mix of the local gravels, but with a predisposition towards the harder quartz-cemented sandstone cobbles (most of which would have been under 70–80mm diameter), and in general avoiding limestones and flint. The more or less complete absence of burnt and calcined flint amongst this is in fact quite typical of the later burnt stone assemblages. The occasional bleaching (patina) present upon the surface of the reddened stone, alongside the cracking, provides a very good indication for the use of the stone for boiling, or else for the production of steam for bathing. Just one piece of burnt stone was recorded from the site’s 2013 evaluation trenches (Evans *et al.* 2014).

Cat. N	Feature	Context	No.	Size (mm)	Wt (g)	Geology	Notes
142	3225	11022	1	70	64	laminated micaceous sstn	thin, split lenticular piece
145	3225	11077	2	55-75 (x2 re-	318	hard sstn	part of same heat-cracked an small cobble
154	3225	11109	1	45	80	hard sstn	
161	3226	11025	2	35 + 80	159	hard mottled sandstone (pebb quartzitic sstn	includes x1 perfectly smooth rolled oval-shaped pebble – like a beach pebble?
192	3240	11131	3	5-22	8	slightly ferrug sstn	all small fragments from a b cobble
207	3242	11126	5	20-100 (x4 re pieces) + 35	171	micaceous sstn (x4 pieces) + qu	incl heat-fractured pieces of pebble
214	3244	11123	6	140x95x70 + + 80 +100	2272	quartzitic grit (Millstone Grit) sstn + soft micac sstn (tr burro +quartzit micac sstn	largest piece has been crude (faceted) around edges prior (> Building Stone)
238	3250	11166	5	50 +75 +85(x	1854	pale metaquartzite (Bunter) + sstn + quartz sstn + calc sstn + sstn	glacial erratic cobbles
247	3250	11176	2	30 + 55	93	fine g quartz micac sstn	fresh-looking heat fractured cobble
201	3242	11115	1	80	337	hard sstn	glacial erratic cobble
218	3245	11133	1	82	308	micaceous sstn	broken cobble
222	3248	11149	3	55 + 75 + 105	798	hard quartzitic sstn + quartziti chert	v rounded waterworn pebb but not cracked (possibly old BS)
232	3248	11170	7	25 + 30 + 45 75 + 80	632	hard calcareous grit + soft mic hard micac sstn + Bunter quar cobble(x2) + chert	

Table 6: Catalogue of burnt stone.

Amongst the burnt stone looked at, there was just one piece (F.3224) seen which may have been crudely shaped and possibly therefore used as rough constructional stone; perhaps as foundation stone, or else as wall footings for other wood and daub structures.

A total of 12.052g of worked stone (three pieces) were recovered from the 2018 excavations, consisting of a circular shallow-domed spindlewhorl (<149>) and the two halves of an upper stone from a Late Iron Age-type Folkestone Greensand quern (<261> & <262>; Fig. 8) recovered from the sub-soil horizon [11178] (see Fig. 7).

<149>, [11080] (slot 2266) - A stone spindlewhorl from F.3225: 42–46mm diameter and 16mm thick; weight 52g. The spindlewhorl appears to have been made from a slightly weathered (therefore pitted) plano-convex to slightly bi-convex limestone pebble, clearly chosen as it was nearly (but not quite) circular and disc-like in profile. The spindlewhorl has been vertically bored through centrally (consisting of an 8mm diameter parallel sided perforation) and then worked around part of its rim (i.e. slightly pecked) in an attempt to make it more bi-laterally symmetrical, thus balanced for spinning. The limestone pebble is probably part of a small cementstone, perhaps made from a glacial erratic (but relatively local) Kimmeridge Clay septarian or Amptill Clay (Corallian) micritic limestone.

<161> & <162> [11178] - An almost (90%) complete upper stone of a shallow beehive quern made of Folkestone Greensand (Lower Cretaceous [Albian]); the source of this being the extraction site at East Wear Bay – Copt Point, Folkestone, Kent from whence these were traded from the Iron Age or earlier through into the Roman period (Green 2017; Keller 1989). The stone is in two parts with a completely preserved conical hopper in between, and a worn grind surface. The combined weight of the pieces is approximately 12kg; the shape of the stone in plan profile and x-section being slightly acentric and lop-sided due to the increased level of wear upon one side (340-280mm x 95–70mm [height]), with an acentrically-placed shallow conical grain hopper 185–170mm wide at the top and 50–60mm at its base.

In classic form, the handle-hole is sub-round and wedge-shaped with a wider cone-like opening of c. 40–70mm with a narrower round ‘spike’ hole of c. 60mm (long) x 10mm (diam) at its end (see Green 2017, figs. 5 & 10). In this example the hole was bored sub-horizontally, thus didn’t penetrate through onto the grind surface following the subsequent wear of the stone. A slightly earlier attempt to bore a hole for a handle can be seen just below this to the left (c.10mm long and wide), one which was soon abandoned in favour of the latter, in order to help ensure more longevity of use. The diagonal hole situated just above the handle however is natural; this may be a fossil burrow, and could be the flaw in the stone upon which it broke. Another short horizontal slot to the right of the damaged handle could be part of an attempt to secure this (wooden handle) that was evidently failing and coming loose. There also appears to be another (possibly a pair) of diagonal slit-like chisel holes present upon the outside of the stone of c. 35 x 5mm (wide) and 25mm (deep). These may have held the spikes of an iron rynd placed across the middle of the top of the hopper in order to maintain the position of the iron axle and keep the stones centred, and in place. Both this and the handle type are key features of Wessex-type Late Iron Age beehive querns (Watts 2002, 31).

The grind surface is very well worn (particularly towards the middle) and slightly concave in profile. It seems most likely that this quern broke during use, there also being no evidence for burning and the subsequent destruction (or re-use) of the stone.

Shaped spindlewhorls made from limestone, chalk or sandstone are not uncommon within Iron Age contexts. Some are more disc-like and flattened, although a biconvex to plano-convex shape with an 8–10mm parallel-sided central perforation is fairly typical amongst such objects made as casual finds. A similar example is reported from Bottisham, South Cambs. (SEE finds.org.uk/database...spindlewhorl: SF 3668); the latter consists of a plano-convex to bi-convex spindlewhorl carved from chalk, some 37mm in diameter with a 10mm central perforation.

The Folkestone quern is a not-uncommonly traded item found in Southern England from Kent to Cambridgeshire, and as far north as the Hunsbury hillfort outside Northampton, from which moderately large numbers of these Late Iron Age rotaries have been reported (see Ingle 1993; Green 2017, 7). The latter forms however, were designed in the singularly tall Hunsbury quern style (examples of which have also been found within Cambridgeshire and the East Midlands), yet by the very end of the Iron Age there is the emergence of more rounded dome-shaped querns (sometimes – as seen here - with a slightly flattish top) possessing much shorter divet handle holes which do not connect with the hopper, here referred to as ‘Wessex types’ (Watts *ibid.*; Curwen 1937, 142, figs. 4–13). Green (2017, 7) refers to a Bishop’s Stortford (Hertfordshire/ Essex border) group of Wessex-type Folkestone querns which might support the idea of some sort of regional variation in form.

In some respects, Site VI’s quernstone strongly resembles this Late Iron Age type (*ibid.*, fig. 5), yet there are similarities also with the earliest post-Conquest Romano-British (pre-100 AD) ‘conical hopper’ type querns (*ibid.* Figs.8-10). However, the latter are usually a bit smaller, are completely flat-bottomed, and occasionally fashioned as dressed (i.e. groove furrowed) stones. In conclusion, this is likely a Folkestone quern that has been fashioned and distributed from a regional workshop at the very end of the Iron Age, perhaps during the immediate pre-Conquest Period. The wear upon this stone attests to its use for milling grain within a domestic context at this settlement before its abandonment following a premature breakage.

Faunal Remains Vida Rajkovača

Of a raw count of 1907 fragments and a total weight of 5488g, some 232 assessable specimens were recorded. Almost half of this figure (113 specimens, 48.7%) was assigned to species level, with cattle dominating the assemblage.

Preservation was largely moderate to quite poor, and fragmentation was quite high. Some 58 specimens were recorded with signs of erosion or weathering, a substantial 25% of the assemblage; eight showed evidence of burning and three had canine gnaw marks. Only two specimens were recorded as butchered and one horse metacarpus was complete, allowing for measurements to be taken.

Though with a small proportion of Conquest Period material present on site, the bulk of animal bone was dated to the Late Iron Age. Material was quantified and considered collectively as a single site assemblage.

The zooarchaeological investigation followed the system implemented by Bournemouth University with all identifiable elements recorded (NISP: Number of Identifiable Specimens). MNI was established using the most abundant skeletal element, taking into account the left and right specimens, as well as zones occurring in more than one element. Additionally, size and age were also considered. Identification of the assemblage was undertaken with the aid of Schmid (1972), Hillson (1999) and the reference material from the Cambridge Archaeological Unit and the Grahame Clark Zooarchaeology Laboratory at the Department of Archaeology in Cambridge. Those fragments impossible to assign to species level were categorised by size (cattle/red deer-sized, pig/ sheep/goat-sized and rodent-sized). Most, but not all, caprine bones are difficult to identify to species; however, it was possible to identify a selective set of elements as sheep from the assemblage, using the criteria of Boessneck (1969) and Halstead (Halstead *et al.* 2002). Ageing of the assemblage employed both mandibular tooth wear (following Matschke 1967; Payne 1973; Grant 1982 and Levine 1982) and fusion of proximal and distal epiphyses (Silver 1969; O’Connor 1989). Where possible, measurements were taken following Von den Driesch (1976). Withers height calculations followed the conversion factors of Kiesewalter for horse, Matolsi for cattle, Teichert for ovicaprids and Harcourt for dog (see Von den Driesch & Boessneck 1974). Bones were examined for both the natural and the cultural taphonomic changes: evidence of weathering, surface erosion, gnawing, charring, butchery, gnawing were all recorded where present.

Amounting to more than all other species combined, cattle were of primary importance, closely followed by sheep/goat (Table 7). The remainder of the assemblage was made up of pig, horse and dog remains. Fragmentation affected the assemblage, resulting in a high proportion of loose teeth. For both the cattle and the sheep/goat cohorts, loose teeth accounted for c. 40% and 60% of sub-sets respectively. This is a substantial percentage and a reflection of poor preservation. Of what little was identified of other species; maxillary, mandibular elements and teeth were identified alongside those corresponding to joints of meat-value.

Taxon	NISP	%NISP	MNI
Cow	58	51.3	3
Sheep/ goat	39	34.5	3
Sheep	1	0.9	1
Pig	6	5.3	1
Horse	6	5.3	1
Dog	3	2.7	1
Sub-total to species	113	100	.
Cattle-sized	50	.	.
Sheep-sized	44	.	.
Mammal n.f.i.	25	.	.
Total	232	.	.

Table 7: Number of Identified Specimens and the Minimum Number of Individuals for all species from all contexts (the abbreviation n.f.i. denotes that the specimen could not be further identified).

The prevalence of cattle and ovicapra is in keeping with expected period pattern for the region. Albeit this is a small assemblage, pig numbers are unusually low. Beyond citing the range of species, the high proportion of loose teeth and poor preservation prevents any further discussion on animal use or economy on site. That said, the over-reliance on domestic sources of food and the restricted range of animals are typical for the Late Iron Age. Whilst informative and conforming with local patterns, the assemblage holds limited potential for future work.

Charred Plant Macrofossils and Other Remains Val Fryer

Samples for the retrieval of the plant macrofossil assemblages were taken from across the excavated area, with a total of 15 being submitted for assessment.

The samples were processed using manual water flotation/washover and the flots were collected in a 300 micron mesh sieve. The dried flots were scanned under a binocular microscope at magnifications up to x 16 and the plant macrofossils and other remains noted are listed in Table 8. Nomenclature within the table follows Stace (2010). All plant remains were charred. Modern roots and seeds were also recorded.

The non-floating residues were collected in a 1mm mesh flot and were sorted when dry. All artefacts/ecofacts were retained for further specialist analysis.

Results

The recovered flots are all small (i.e. <0.1 litres in volume) and most are very limited in composition. Occasional cereal grains, chaff elements and seeds are noted, but the majority are very poorly preserved, being severely puffed and distorted, probably as a result of very high temperature combustion.

Wheat (*Triticum* sp.) grains are present within four of the samples. Most are of an elongated ‘drop’ form typical of spelt (*T. spelta*), but at least one specimen from sample 613 (F3221) is of a more rounded hexaploid type form. Occasional spelt wheat glume bases are also recorded. The majority of the cereal grains cannot be closely identified due to severe distortion and fragmentation. The only possible non-cereal crop plant remain noted is a single large cotyledon of possible field bean (*Vicia faba*) type, which was also found within Sample 613.

Key to Table 8

x = 1 – 10 specimens xx = 11 – 50 specimens
cf = compare fg = fragment tf = testa fragment b = burnt



Figure 8. Conjoining quernstone pieces (<161> +<162>)

Weed seeds are exceedingly scarce, occurring within only three of the assemblages studied. All are of common segetal weeds, namely brome (*Bromus* sp.), small legumes (Fabaceae), goosegrass (*Galium aparine*) and dock (*Rumex* sp.). A single possible small fragment of hazel (*Corylus avellana*) nutshell is present within the assemblage from Sample 616 (F.3221). Comminuted charcoal/charred wood fragments are present at a low to moderate density within all fifteen samples, but other plant macrofossils are all but absent.

The black porous and tarry residues, which are present within most assemblages, are all thought to be derived from the high temperature combustion of organic remains (including cereal grains). Other remains are scarce, but small pieces of burnt/calced bone are noted along with fragments of burnt or fired clay.

In summary, all fifteen assemblages are very limited in composition, with some containing only small pieces of charcoal/charred wood. The plant macrofossils and other remains that were recorded are all probably derived from scattered midden or hearth waste, all of which was possibly accidentally incorporated within the feature fills. It would appear that some limited cereal processing activities may have been occurring locally, although probably only on an *ad hoc* basis as grain was required.

Discussion

Many facets of the site's evidence can now be considered 'typical' of the period; for example, the spelt wheat within its plant remains and, too, the dominance of cattle in its faunal assemblage. The recovery of what is clearly kiln furniture within the site's fired clay assemblage indicates local pottery manufacture. With similar kiln material also present at New Hall and as an Early Roman kiln was excavated at the Wilberforce Road Sport's Ground settlement (Brittain & Evans 2018), this would now be the third instance of 'early' pottery manufacture on one of the western Cambridge sites. Elsewhere in the region such evidence is becoming relatively widespread (e.g. Anderson & Woolhouse 2016) and suggests that pottery production was broadly practiced for immediate needs.

Admitting caveats concerning the settlement's partial-only exposure, what is distinct is the date of the settlement's foundation, layout and what seems to have been its short duration. It seems to only have been established at, in effect, the cusp of the Roman Conquest. There is no evidence that, as in the project's other two Late Iron Age farmsteads – or, indeed, those excavated at Cambourne (*et al.* 2009) – of it first having had an arrangement of 'organic-type' compounds that were only 'regularised' through Romanisation. Instead, in this case, it seems that its enclosures were of rectangular layout from the outset. What are we to make of this? Could the settlement actually relate to a family displaced/'introduced' through the Conquest?

Again, bearing in mind the site's limited exposure, what accounts for what seems to have been its short duration? Immediate topographic location may have contributed as, lying relatively high in the local landscape, achieving regular water supplies could have proven difficult in dry summer months and have entailed fetching it up from the brook below. Potentially reflecting poor/limited understanding of the landscape's dynamics, this could be considered symptomatic

of 'new arrivals'. In short, *the settlement may represent something of a failure*. In this regard it is relevant that Site II's 'model' Early Roman farm (Cessford & Evans 2014), may well also have involved 'introductions', but it continued for a century longer than Site VI's.

Yet, in the light of the apparent brevity of the settlement's occupation, its assemblages are substantial. If adding the evaluation-phase material, then in total some 2000 animal bones and c. 1175 sherds were recovered. A lot of finds for so short a span, this attests to quite intense occupation. Given this, and cumulative manner in which its enclosures seem to have been added to each other to make a 'whole' (i.e. Enclosures A + B + C), this could suggest that it housed more than one family.

Only established in the middle decades of the first century AD, the settlement displays an uncommon Iron Age-to-Roman trajectory. Its pottery assemblage offers a somewhat different picture of 'Romanisation' than that seen at the Traveller's Rest Sub-site (Evans 2015). There, clear continuity between the settlement's Middle and Late Iron Age and, then, Roman phases was demonstrated. As Percival emphasises above, its Late Iron Age attests to a 'classic' Aylesford-Swarling community, having as it does pedestalled pottery forms and these are lacking from Site VI and, rather, she sees its pottery as being 'Aylesford-Swarling influenced'. Does the answer lie in chronology? Perhaps, if the settlement was only established in the middle decades of the first century AD, pedestalled vessel forms were then no longer in vogue.

In this capacity, the lack of any contemporary 'early' metalwork – coins or brooches (its few diagnostic item being of later Roman date) – is unfortunate. So, too, is that neither Site VI's or the Traveller's Rest Sub-site settlements' cemeteries were located. The former could well have been destroyed by the construction of the M11; the latter's likely through nineteenth century quarrying. Be this as it may, the Site VI provides insights into how complex the area's Romanisation was. Certainly not any kind of uniform process, yes, in some instances it involved direct settlement continuity; in others, displacement/introductions.

The War Field Villa (Site VII)

Located on the project-area's low claylands (c. 17-15.5m OD) on the western side of Madingley Road's Park & Ride (Fig. 1), the hitherto unknown site was first discovered in the course of 2009's evaluation fieldwork (Evans and Newman 2010, 105-19). Although no buildings as such were then exposed (including within the 60 x 70m area targeted for geophysical survey), its finds proved rich, especially the quantity of its metalwork and the character of its building materials. The latter included *tesserae*, *opus signinum* mortar, painted plaster, window glass and, in addition to stone and ceramic roof tiles, both box-flue and *pilae* tiles. It was, accordingly, clear that a Late Roman high status building had stood nearby and we suspected that it likely was a villa. Based, however, on both the trench findings and the geophysical results, it was then assumed that its main buildings lay to the southeast and had probably been destroyed during the construction of the Park & Ride a decade earlier. (In 2009, limited trial trenching was also conducted along the proposed line of a road along the eastern side of the latter's grounds, with no archaeology there encountered.)

With allotment garden-usage only vaguely intended for the site-area's eventual development and, without any immediate threat, no plans were then made for its excavation. Yet, as we were aware just how crucial this complex would be for the understanding of the organisational dynamics of the area's Late Roman landscape, during the course of 2014's Phase 1 excavation programme it was briefly returned to so that a larger excavation-sample could be retrieved (Cessford 2015). This only further confirmed the earlier findings. All told, from the two phases of evaluation fieldwork 454 pottery sherds, 846 animal bones and eight Roman coins were recovered. Aside from quantities of building materials and other metalwork was a remarkable find, what seemed to be a lead-cast mussel shell.

Four years later proposals were firmed up for the development's Phase 2 programme, with the site-area then destined for playing field pitches, the decision was made to progress with the complex's full excavation. With a c. 1.9ha-area designated, a three month-long programme was envisaged. On stripping the area, though, it quickly became apparent that we had underestimated its archaeology, as the complex's main buildings – instead of lying east under the Park & Ride – fell within the excavation-area itself. Also, by the character of the double-ditch system that enclosed the structures – and in awareness that Arbury's King's Hedges' villa also had been set within such a large rectangular compound – based on the earlier recovery of a double-ditch line originally thought to have been a Medieval droveway in the 2009 evaluation just to the north (Site VIII; Evans and Newman 2010, 121), we duly extended the site-area in that direction; in total, an area of c. 2.4ha was, thereby excavated. With the double-ditch compound continuing in that direction, obviously it can only be regretted that the complex's full footprint was not exposed; nevertheless, approximately three-quarters of it was and there is no reason to suspect that any further buildings lay in the unexcavated portion. (Note that we were curtailing in extending the edges-of-excavation any further south or west due to nature-conservation factors, particularly mature tree stand-offs.)

By drawing upon contingency funding and reallocating resources, altogether the excavations continued over more than five months and until February of 2019. This included a public open-day (15th September) that attracted over 800 visitors (Fig. 9) and, also, a public-participant excavation (10th-21st September) with 26 volunteers.



Figure 9. Site VII aerial view and Open Day public event

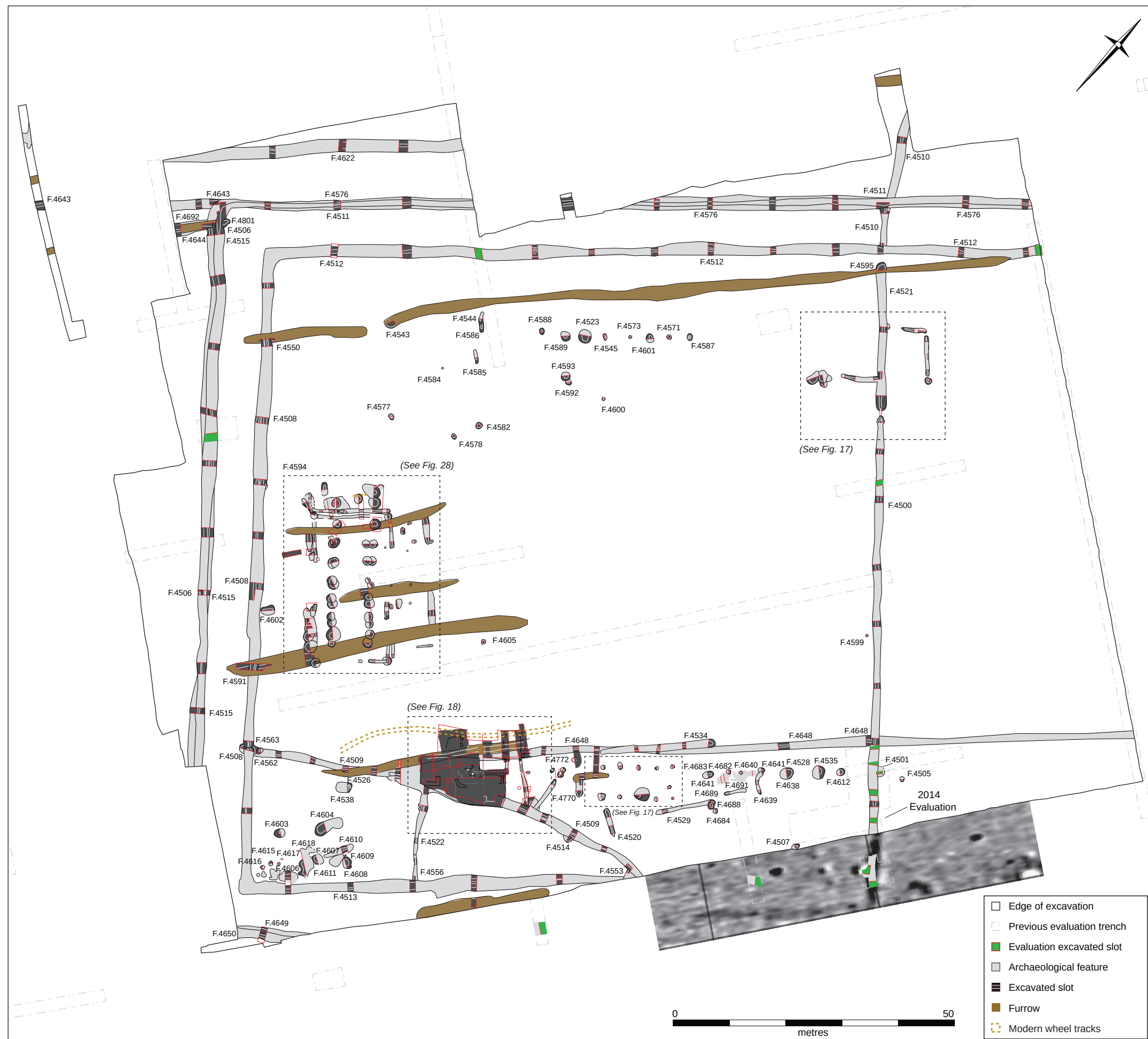


Figure 10. Feature plan

Various invitational groups were also toured through the site as the investigation progressed, with visitors from many parts of the globe included in these parties.

Given the nature of the site's archaeology, an intense excavation-sample was implemented; slots were excavated throughout on a 10m interval, with there also being considerable additional judgemental targeting of either find-rich or '-distinct' portions. As at Site VI, a two-level machine-stripping regime was conducted, so that the lower subsoils were metal-detected throughout. Equally intense was the site's environmental sampling, with 68 bulk samples processed (700 litres; this being in addition to the 10 samples/157 litres done during the evaluation phases). Unfortunately, of the nine pollen samples submitted for study, only one proved insightful. Mention should also be made that multi-spectrum chemical analysis-sampling was conducted on a grid-basis across the compound's core-area over a 10m grid, with more intensive (2 and 2.5m interval) sampling over Structures 2 and 4. Still being processed at the time of writing, its results will feature in the site's final publication.

Perhaps the greatest challenge of the site was articulating its masonry bath-house complex. Its elaborate and much modified hypocaust system – evidently the source of much of site's high quality buildings materials – is a 'first' amongst Cambridge's known Roman villa sites (Arbury and Teversham; Lisboa 1994; Pullinger and White 1991). Certainly, the degree that it underwent modification suggests only 'partial knowledge' on the part of its residents and, therefore, might reflect upon their status and just what specialist building skills they could subsequently draw upon.

Amongst the site's most singularly remarkable finds is an item that only indirectly relates to its Roman usage. Probably imported from the Continent, this was a thirteenth century lead seal depicting a seated monarch. This small piece had, though, been carefully trimmed so that the figure remained intact and then rolled, like a Roman curse. Recovered as a ground-surface find, it can only be thought that it was deposited in knowledge of the earlier complex and, perhaps, attests to its lingering visibility in the Medieval landscape.

As to the site's War Field entitlement, this derives from a field-name, occurring on a mid-twentieth century University Farm map, immediately east of our site. Despite searches, no one has yet established its derivation. It can only be suspected that it must somehow relate to the very high number of musket/pistol balls recovered from the site. Herein must surely lie a 'story', but for the moment it is one that evades us.

To aid materials analyses and the identification of feature relationships, the site was initially divided into 11 feature groups (Fig. 11):

1. Structure 2
2. Structure 3
3. Structure 4
4. Structure 1
5. Ditches
 - a. Enclosure inner ditch
 - b. Enclosure outer ditch
 - c. Pre-enclosure field system
 - d. Enclosure inner partition
 - e. Trackway ditch
 - f. Feeder ditch
6. Pit Alignment 1 (NW)
7. Pit Alignment 2 (SE)

8. Pit cluster south of Str.3
9. Other pits & isolated features
10. Smaller Ditches Gullies
11. Furrows.

Where necessary following analysis, the feature groups were subsequently assigned to feature categories. Mainly corresponding with the initial groups, the only real difference was the distinction of Pit Groups 1, 2 and 4 within Feature Group 9, along with Rubble Spreads 1 and 2. It is with the feature categories through which the following text is structured.

The considerable material archive that belongs to Site VII, throughout this report including the evaluation-derived assemblages, was overwhelmingly Roman and predominantly of the later 3rd and 4th centuries. The frequency of 1st to 3rd century AD representation was comparatively low and seemingly more an outcome of later reused/ reincorporated materials rather than a reflection of any early activity within the site. Prior to this was a small later Iron Age component, and the site's post-Roman activity is distinctly post-Medieval, within the 16th to 19th centuries.

Some indication of the scale of material recovery by feature category is presented in Table 9; the highest values are highlighted in red text. The site's finds totals are outlined in Table 10.

Phasing Overview

Phasing of the site rests in large upon correlation of its coinage in tandem with sequences of modification in Structures 3 and 4, with subtleties therein. With most of the site's pottery of broad 3rd-4th century AD date, its assemblages provides little refinement to the phasing picture .

Four main and two sub-phases have been identified:

- | | |
|--------------------|---|
| <i>Prehistoric</i> | One small pit and redeposited later Iron Age artefacts |
| <i>Roman I.1</i> | Ditched fieldsystem and trackway (see Fig. 14) |
| <i>Roman I.2</i> | Fieldsystem with Structure 3.1 bath-house, Structures 1 and 2 and yard (see Fig. 15) |
| <i>Roman II.1</i> | Decommission of Structure 3.1 and establishment of Structure 3.2, with Structure 4.1 (aisled hall) and enclosure-compound; fieldsystem, Structures 1 and 2 may still be operational (see Fig. 16) |
| <i>Roman II.2</i> | Demolition of Structure 4.1 and establishment of Structure 4.2; recutting of enclosure's outer ditch (see Fig. 16) |
| <i>Roman II.3</i> | Final abandonment, with demolition of buildings and infilling of enclosure-compound |
| <i>Post-Roman</i> | Medieval knowledge of the ruins?; Post-Medieval agriculture. |

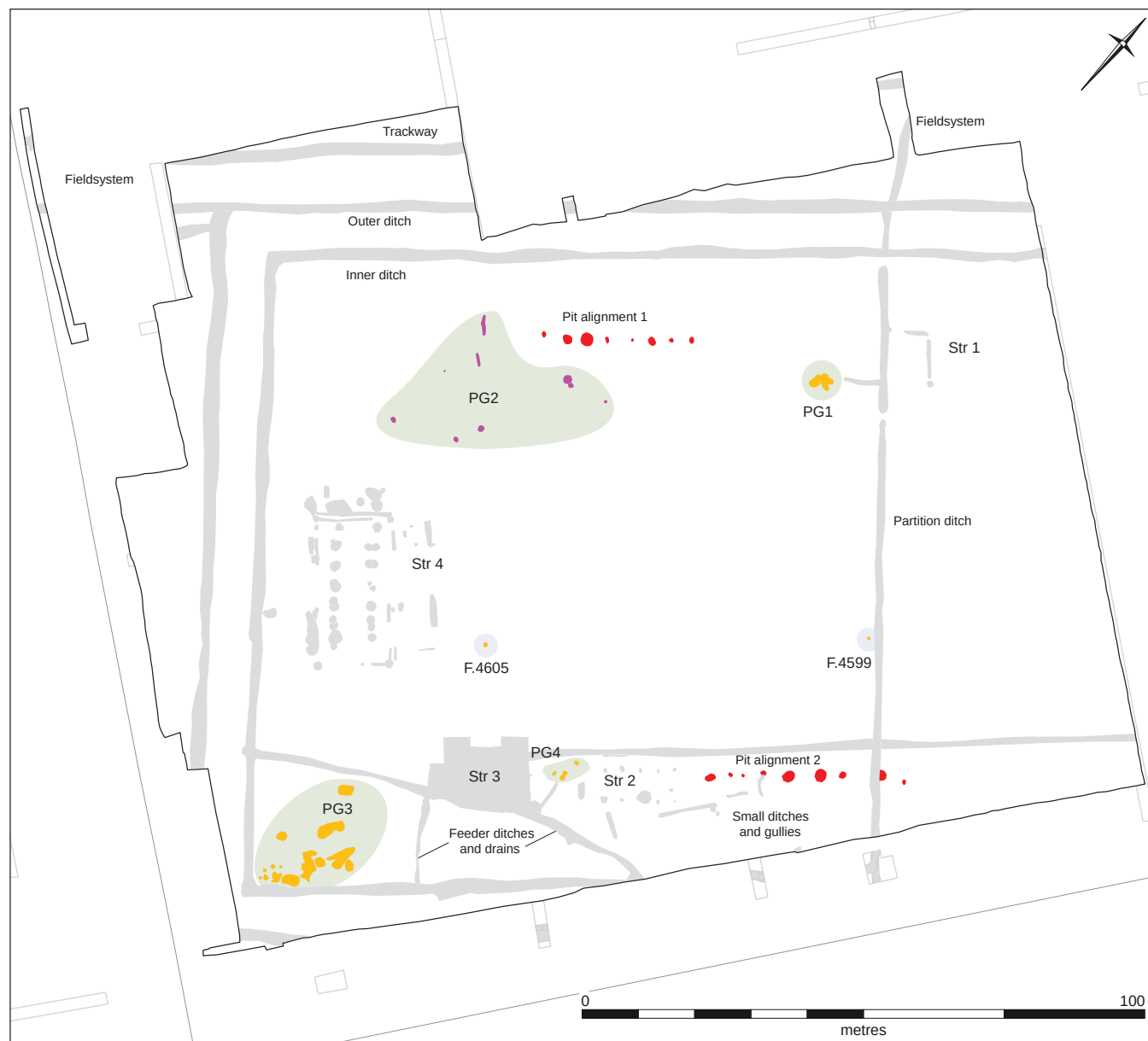


Figure 11. Feature categories

Feature category	Pottery no.	Animal Bone (g)	Cu	Fe	Pb	Shell (g)	Worked bone no.	Rotary Quern	Glass no.	CBM (g)	Tesserae no.	Mortar/ Plaster (g)	Painted Mortar/ Plaster (g)
Enclosure Inner ditch	581	14331	50	76	22	3341	2	2	17	42525	273	276	12
Enclosure Outer ditch	4	257	.	4	.	44	.	.	1	1441	15	326	.
Enclosure Outer ditch recut	51	8682	7	13	1	301	.	.	.	81024	150	368	.
Enclosure -Partition ditch	1301	23081	21	137	26	11185	1	1	61	49863	201	1367	671
Feeder Ditch	420	13659	8	45	16	2103	2	2	21	199099	184	1449	413
Fieldsystem	.	268	.	.	.	10	.	.	.	2191	.	.	.
Pit Alignments 1 & 2	38	3641	.	3	.	74	.	.	1	1904	2	4	.
Pit Groups 1 -4	211	655	3	16	1	412	.	3	28	11067	63	34	.
Rubble Spreads 1 & 2	197	738	3	27	.	1874	.	1	.	16433	849	30	.
Small ditches & gullies	108	886	3	12	.	1441	.	.	2	7365	303	86	.
Structure 1	138	1404	2	7	.	35	0	1	2	2441	4	92	.
Structure 2	21	138	1	12	.	78	1	.	5	761	73	2859	4
Structure 3	312	6869	14	17	2	1358	.	5	46	630707	1851	93000	6021
Structure 4	209	680	26	26	2	478	.	1	3	22357	2699	4224	1669

Table 9. Overview of main feature categories’ finds. Greatest values highlighted in red.

	Pottery	Animal Bone	Human Bone	Cu	Fe	Pb	Ag	Shell	Worked bone	Rotary Quern	Saddlequern	Glass	CBM	Tesserae	Mortar/ Plaster	Painted Mortar/ Plaster	Building Stone
Quantity	3961	13227	3	295	677	251	4	2789	9	23	5	223	8884	7262	1860	736	6500+
Weight (g)	47527	77230	150	839	5461	6698	5	23773	80	15292	9790	687	1123492	204188	104174	8790	3540000+

Table 10. Summary of finds totals.

Two phases bracket the site's Roman usage. On the one hand, there was low-frequency prehistoric activity (mainly later Iron Age). On the other hand, with the site's post-Roman rural usage the nature of some occasional Medieval finds point to continued recognition of the site's significance before turning to ground for hunting and furrow-agriculture, mainly dating to the 17th-19th centuries.

With only limited 1st-2nd century AD representation within the material assemblage, the Roman phases largely appear to occur late within the 3rd-4th century, if not entirely within the latter. A ditch-defined field system marks Roman Phase I.1, oriented northeast-southwest with a trackway skirting along the west side of the excavation area. This was an extensive system that may be traced from the trenched evaluation to the north and south. No datable material was recovered from these early features, though there is no cause for imagining any major separation between the establishment of the field system and the subsequent construction in Roman I.2 of a masonry bath-house, Structure 3. Comprising a hot room, warm room and cold room, the bath-house overlay one of the field system ditches, infilled and devoid of any finds. This was clearly an important building, constructed of stone from a variety of sources and ceramic materials. 'Feeder' ditches channeled water downslope, probably from ridge-slope springheads near to the Traveller's Rest Sub-site in the northeast down to the bath-house in the lower flat clay valley. Also assigned to Roman I.1 are two parallel pit alignments and, in series with one of these, a small gully-defined building, Structure 1, along with an aisled building, Structure 2. All similarly aligned upon the northeast-southwest orientation established by the Roman I.1 field system, these components were distributed across a rectangular yard-arrangement, with a central open area. Structure 2's aisled building may, on account of its interior hearth and items of personal adornment obtained from one of its postholes, may have been one of the primary residences in this phase and a multi-functional building (i.e. not just a barn).

Phase II.1 saw a major remodeling of the complex. Pad-form rubble foundations were fashioned over part of the infilled feeder ditches as part of an extension to the north end of Structure 3, and the bath-house hypocaust and deep room were infilled with rubble and, though surviving only partially, a new ground-level clay floor was laid (Structure 3.2). A similarly pad-style winged frontage was set on the building's west side, and 'villa-like pretensions' were also reflected by the faunal assemblage dumped mainly within the remaining hollow of the feeder ditches on the building's east side; this being of a variety of wild, avian and large domestic breeds. Whereas only little of Structure 3.2 may be traced, a second and much larger building – an aisled hall – was then also constructed, Structure 4.1. With much *tesserae* found mixed within its post pit packing material, this building had a porch along its northeast side. This was contemporary with the establishment of a large rectangular, double-ditched enclosure-compound, partly superimposed over sections of the field system with an interior partition.

In Phase II.2, another major episode of remodeling took place of Structure 4, the initial building there being demolished, possibly owing to fire damage, and then replaced in a near-mirror-fashion by a slightly shortened, but still substantial, aisled building; its northwest side having some manner of an annex structure. The outer

ditch of the enclosure-compound also saw a narrow deep recut along its entire circuit, though there is no evidence to immediately or directly correlate this with the modifications of the aisled building.

Much of the dating evidence relates to the interface between Roman II.1 and Roman II.2. Coins dated to AD337-341 were forthcoming from the rubble infilling of the reduced floors of Structure 3.1, which at least points to the establishment of Structure 4.2 post-AD337. This date also corresponds with the earliest coinage from Structure 4.1 (also AD337-341). However, this structure may have been short-lived, for the fills of cuts remaining from the robbing of the Structure 4.1's southwest walls contained Coin Hoard 2, dating no later than AD350-353. Thick charcoal deposits within the upper profile of the Structure 4.1 post pits and within the visible post-pipes may indicate that this occurred on account of fire damage, which could explain its short duration.

The enclosure-compound ditches had a three-fill sequence. The base deposit – largely sterile natural silting – produced no tightly datable material. Both the middle and the upper fills were dark and artefact- and often charcoal-rich deposits, reflecting the site's domestic usage and, through dumps of building materials, its structural changes; they were, nonetheless, distinguishable as separate depositional horizons. Although no datable coins derived from the mid-profile deposits, the upper produced a number within a range of AD 346-348. The uppermost deposits of both the enclosure-compound's inner boundary and its partitioning ditch also produced coinage with a respective latest timeframe of AD364-375 and AD364-388, marking the complex's eventual closure. Related to this, from the rubble core of Structure 3.2's winged frontage came a coin dated AD364-378, which may point to the building's ultimate demise.

The evidence from the coinage thereby provides a basic timeline at least for the site's Roman Phase II activities. This is short, stretching to just c. 50 years, from AD337 AD at its earliest to no later than AD 388 AD.

The open nature of the enclosure-compound, with relatively few interior features apart from its buildings – lacking the accrued 'mess' / mass of the period's longer sequence non-villa domestic settlements – there are few stratigraphic relationships by which to elucidate the site's phasing. It can only be regretted in this regard that the crucial interrelationship between Structure 3.1's Feeder Ditch (F.4508) and the main double-ditch enclosure-compound, along the site's southeastern edge, could not actually be established due to an environmental 'stand-off'. This nonetheless represents one of the sequence's hinge-points. Essential to the bath-house's operation, the water-delivering Feeder Ditch can only have functioned prior to the establishment of the double-ditch boundary and, thereafter, water could no longer have been achieved in that manner. It equally warrants mention that, invariably, there is some ambiguity whether the primary form of Structures 3 and 4 stood together. In other words, was the primary form of the aisled hall contemporary with the bath-house or was that role then fulfilled by Structure 2's much smaller aisled building?



Figure 12. Post-Roman phase plan

Post-Roman Truncation

Although breaking from a sequence-led description, the site's post-Roman agricultural activity is foregrounded here to appreciate its impact upon the landscape's earlier 'core' archaeology. Outlined in detail below, this consisted of furrows, plough or sub-soiling scars and field drains, plus more recent development-related dumper wheel ruts that all crossed the site over a northeast-southwest orientation (Fig. 12). Reaching to a depth of up to 0.3m and containing various Roman materials, the impact of these features was most obvious within Roman Structures 3 and 4.

PREHISTORIC

The majority of any pre-Roman presence was represented by material mixed within later assemblages from both Roman and post-Roman contexts. Included in this was a single sherd of later Neolithic pottery from a Structure 4 post pit that, along with a single retouched flint flake from the 2013 evaluation (Beadsmoore and Timberlake in Cessford 2014, 66), indicates the site's earliest human presence. Following from this, later and Late Iron Age pottery (57 sherds), with five fragments of saddlequern, three hammer stones and a rubbing stone – all present within dumps of burnt stone that clearly belonged to the site's Roman usage (see *Worked Stone and Building Stone*) – attest to low-intensity later prehistoric activities (Fig. 13). With five sherds of later Iron Age pottery (6g), F.4599, a small pit or posthole (0.4m diameter, 0.2m deep), was the site's only feature to contain exclusively prehistoric material, though also deserving of mention is pit F.4732 that, cutting a post pit of the 4th century AD Structure 4.1, had 23 sherds of a single later Iron Age jar or bowl and part of a human femur. The general distribution of Iron Age pottery, along with pit F.4599, skirted the site's east margin, beyond which further evidence may be present.

Prehistoric Pottery – Sarah Percival

A total of 57 sherds (452g) was collected from 19 contexts (Table 11). The assemblage mainly derived from contexts also containing Roman (or post-Medieval) pottery, and predominantly comprised sherds of the Later Iron Age (350BC+), with one sherd of earlier prehistoric pottery and one scrap of indeterminate prehistoric pottery; only pits F.4509 and F.4732 contained only Iron Age pottery. The pottery was poorly preserved with a mean sherd weight (MSW) of 8g, with most sherds being small and abraded.

The assemblage was analysed in accordance with the guidelines recommended by the Prehistoric Ceramic Research Group (PCRG 2010). The total assemblage was studied and a full catalogue prepared. The sherds were examined using a binocular microscope (x10 magnification) and were divided into fabric groups defined on the basis of inclusion types. Vessel form was recorded and the sherds were counted and weighed to the nearest whole gram. Decoration, condition, residues and sooting were also noted.

Later Iron Age pottery in a range of handmade sandy reduced and shell-tempered fabrics was recovered from a series of Roman ditches, pits, postholes and gullies. These sherds include rims from

two vessels: one a direct rounded rim; the second from a slack shouldered jar with everted rim (Hill 2003, Type D) typical of later Iron Age utilitarian pottery in East Anglia. Near to Pit Alignment 2, a rim from a slow wheel-finished bead rim jar in sandy shell tempered fabric of Late Iron Age date was recovered from rubble dump F.4640-1, along with five other Iron Age sherds (another Iron Age sherd came from pit F.4525 of Pit Alignment 2), and two undiagnostic rim fragments in grog and shell-tempered fabrics came from furrow F.4549 that cut the upper deposits of Structure 3. The largest single deposit of Iron Age pottery came from pit F.4732 at the north corner of Structure 4.2, which contained 23 sherds, 228g, from the base of a jar or bowl. These sherds were heavily burnt.

Feature group	Feature	Context type	Context	Spot date	Qty	Wt (g)	Count	MSW
2. Structure 3	4549	Furrow	16116	LIA	2	51	2	26
	.	Rubble layer	17364	LrIA	3	13	.	4
3. Structure 4	.	Rubble layer	16904	LIA	2	11	.	6
	4524	Post pit	16078	LNeo / BA	1	6	1	6
	4696	Post pit	17044	LrIA	1	6	1	6
	4732	Pit	17087	LrIA	23	228	.	10
5a. Enclosure Inner Ditch	4513	Ditch	16475	LIA	1	13	.	13
			Surface	LrIA	1	21	.	21
5d. Enclosure Partition Ditch	4500	Ditch	16022	LrIA	1	4	.	4
			16028	LrIA	1	5	.	5
			16460	LrIA	1	5	.	5
				?Prehistoric	1	2	.	2
7. Pit Alignment 2 (SE)	4535	Pit	16100	LrIA	1	2	.	2
9. Pit Group 2 & Isolated	4507	Pit	16036	LrIA	2	7	.	3
	4544	Pit/Gully	Surface	IA	3	15	.	5
	4599	Posthole	16432	LrIA	5	6	.	1
	4640	Rubble dump	16649	LIA	1	11	1	11
	4641	Rubble dump	16059	LrIA	5	31	1	6
	4730	Gully	17255	LrIA	2	15	.	7
Total					57	452	6	8

Table 11. Quantity, weight, mean sherd weight and vessel count by rim of pottery by Feature Group. Fabric descriptions are listed in Table 12. A single rim in vacuous fabric with sparse flint inclusions (recovered from post pit F.4524 of Structure 4.1) has narrow pinched cordons on the exterior. The sherd has a direct flattened rim and may be from a Grooved Ware or perhaps Beaker vessel.

This small assemblage contains only one sherd of possible earlier prehistoric pottery, found in a residual context. The bulk of the assemblage comprises abraded scraps of Later and Late Iron Age pottery that, with two exceptions, was recovered from contexts which also contained Roman or later pottery. Pits F.4509 and F.4732 contained only Iron Age pottery, though F.4509 contained scraps of ceramic building material (CBM) and F.4732 - also containing human bone - is stratigraphically associated with the Late Roman Structure 4.2. One sherd of shell-tempered pottery was found in pit/gully F.4544 which also contained a saddlequern fragment as well as 97 sherds of later Roman pottery. This sherd was Iron Age but was otherwise not closely datable. The bulk of the Roman pottery is dated to 3rd-4th century AD with only a small early Roman assemblage (see *Roman Pottery*). The later Iron Age and Late Iron Age pottery is contemporary with or immediately predates this early Roman material.

Spot date	Fabric	Description	Qty	Wt (g)
Early prehistoric	QFl	Sandy with sparse medium angular flint	1	6
Later Iron Age	GTW	Moderate pale sub angular grog	1	3
	QOX	Sandy with oxidised surface	25	238
	QRED	Sandy reduced ware	9	27
	Qsandwich	Sandy with oxidised surfaces	2	26
	QSh	Sandy with moderate medium shell	2	13
	SGWO	Sandy greyware with oxidised surface	1	5
	ShCC	Common coarse shell	3	15
	ShQu	Common coarse shell with sand	1	8
	SRW	Sandy reduced ware	2	11
	STW	Wheelmade or finished shell tempered ware	2	10
	STWOX	Shell tempered ware with oxidised surfaces	1	2
Late Iron Age	GTWSH	Moderate pale sub angular grog with rare shell	1	32
	MSRW	Micaceous sandy reduced ware	1	9
	Qsandwich	Sandy with oxidised surfaces	1	2
	SGWQ	Sandy greyware with common rounded quartz	1	13
	ShQupimpOX	Common coarse shell with sand and rounded quartz sand giving pimply texture	1	11
	STW	Wheelmade or finished shell tempered ware	1	19
NCD	ShCC	Common coarse shell	1	2
Total			57	452

Table 12. Prehistoric pottery fabric description.

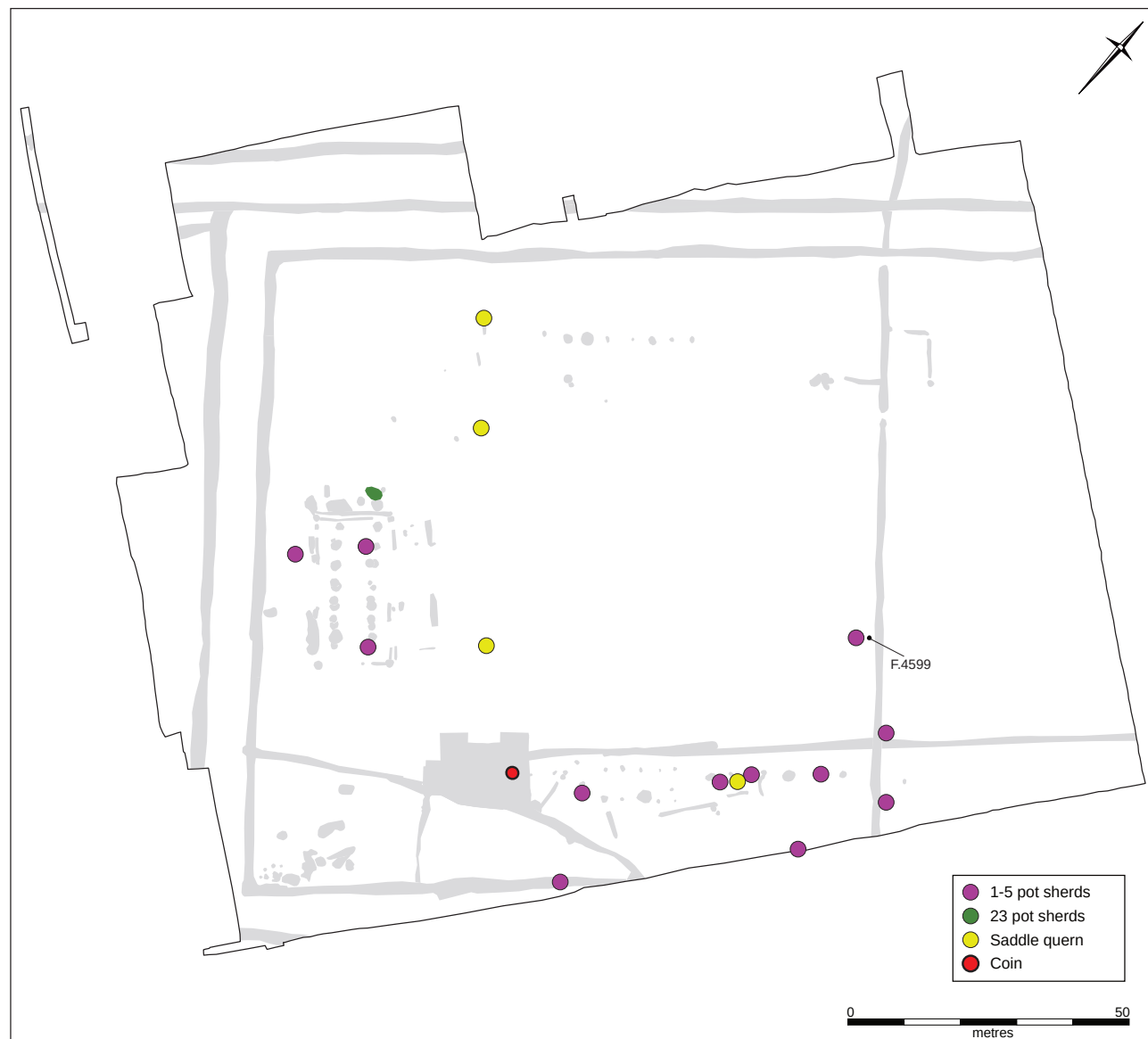


Figure 13. Iron Age features and residual finds

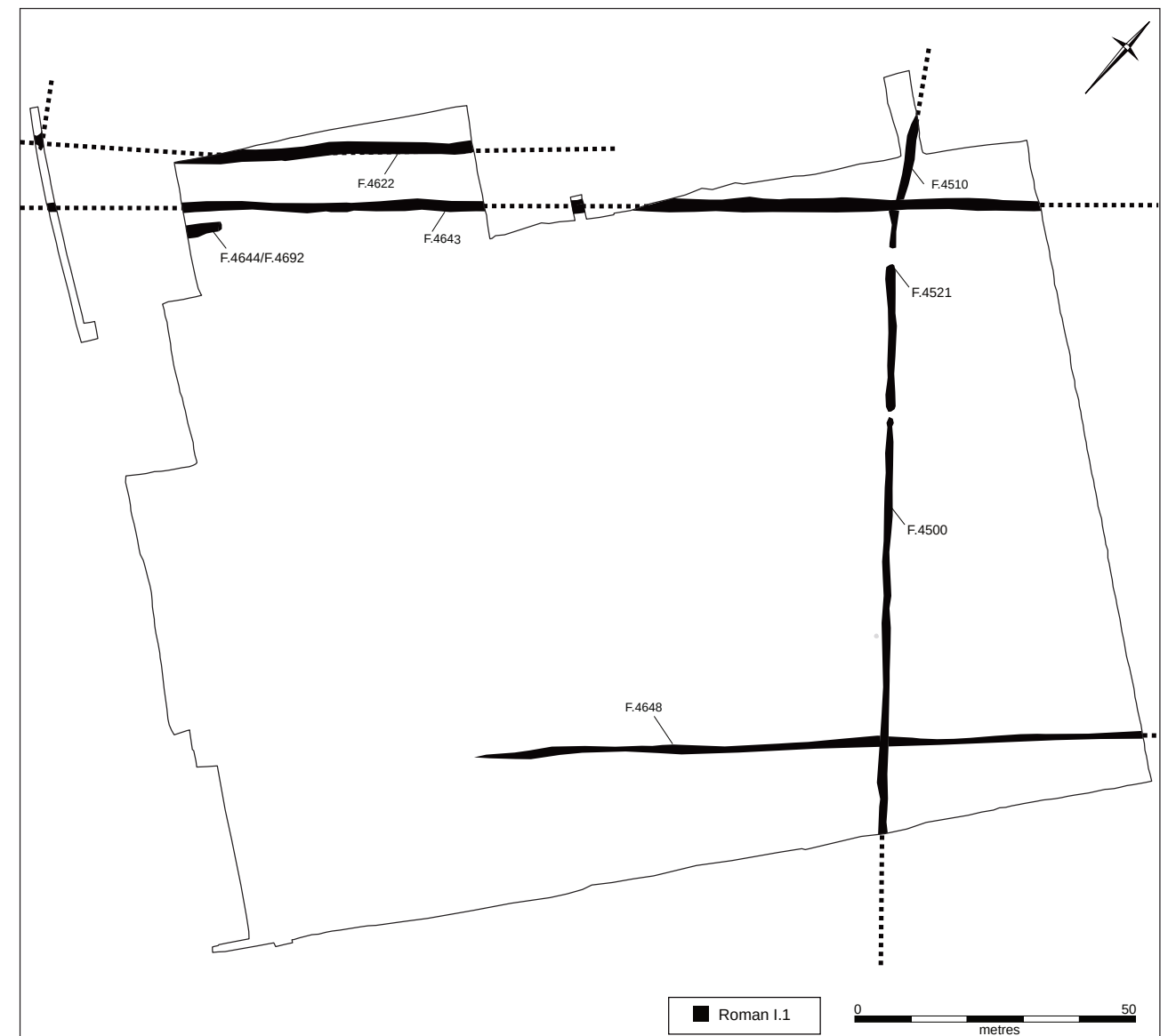


Figure 14. Roman I.1 phase plan

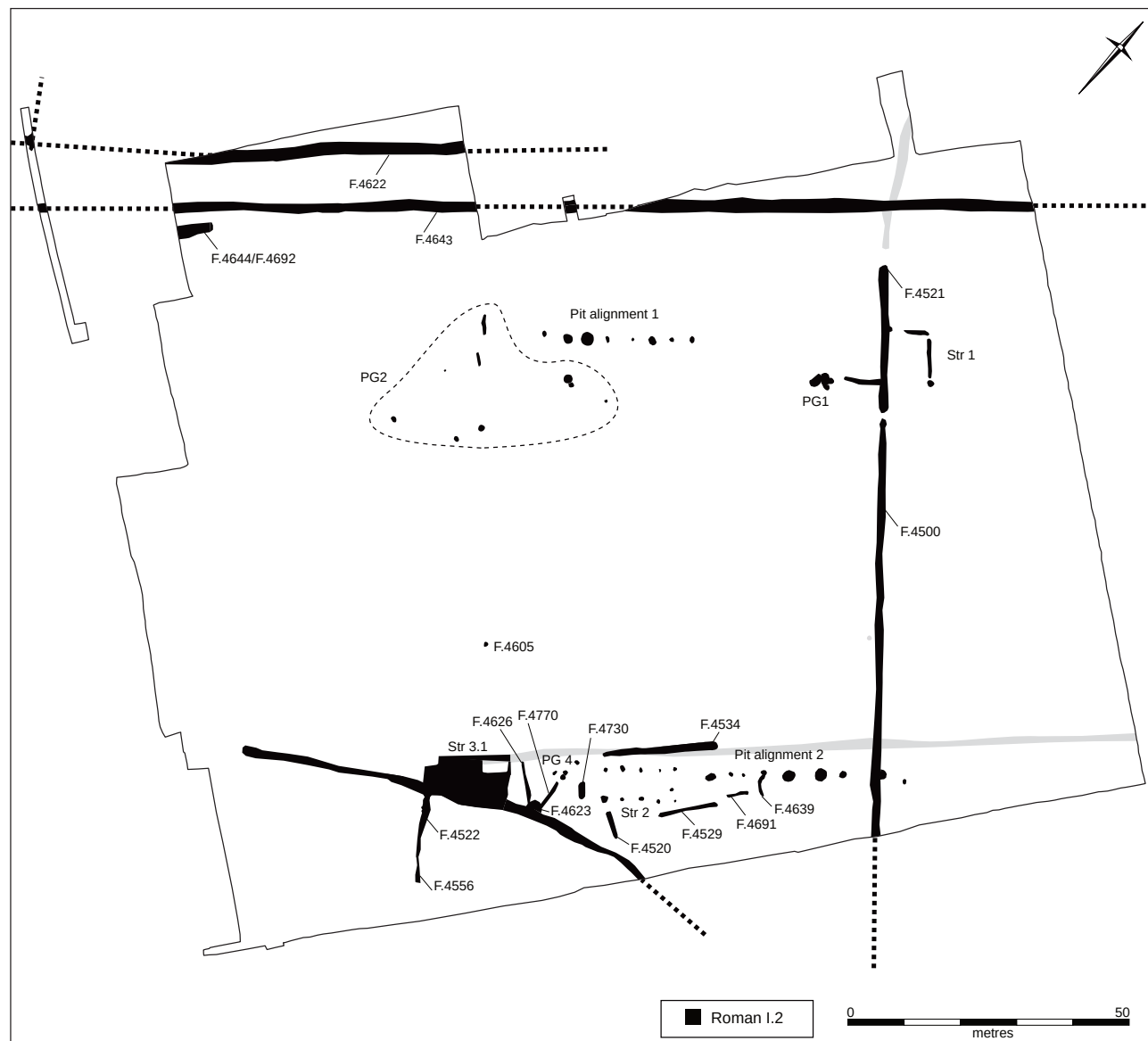


Figure 15. Roman I.2 phase plan

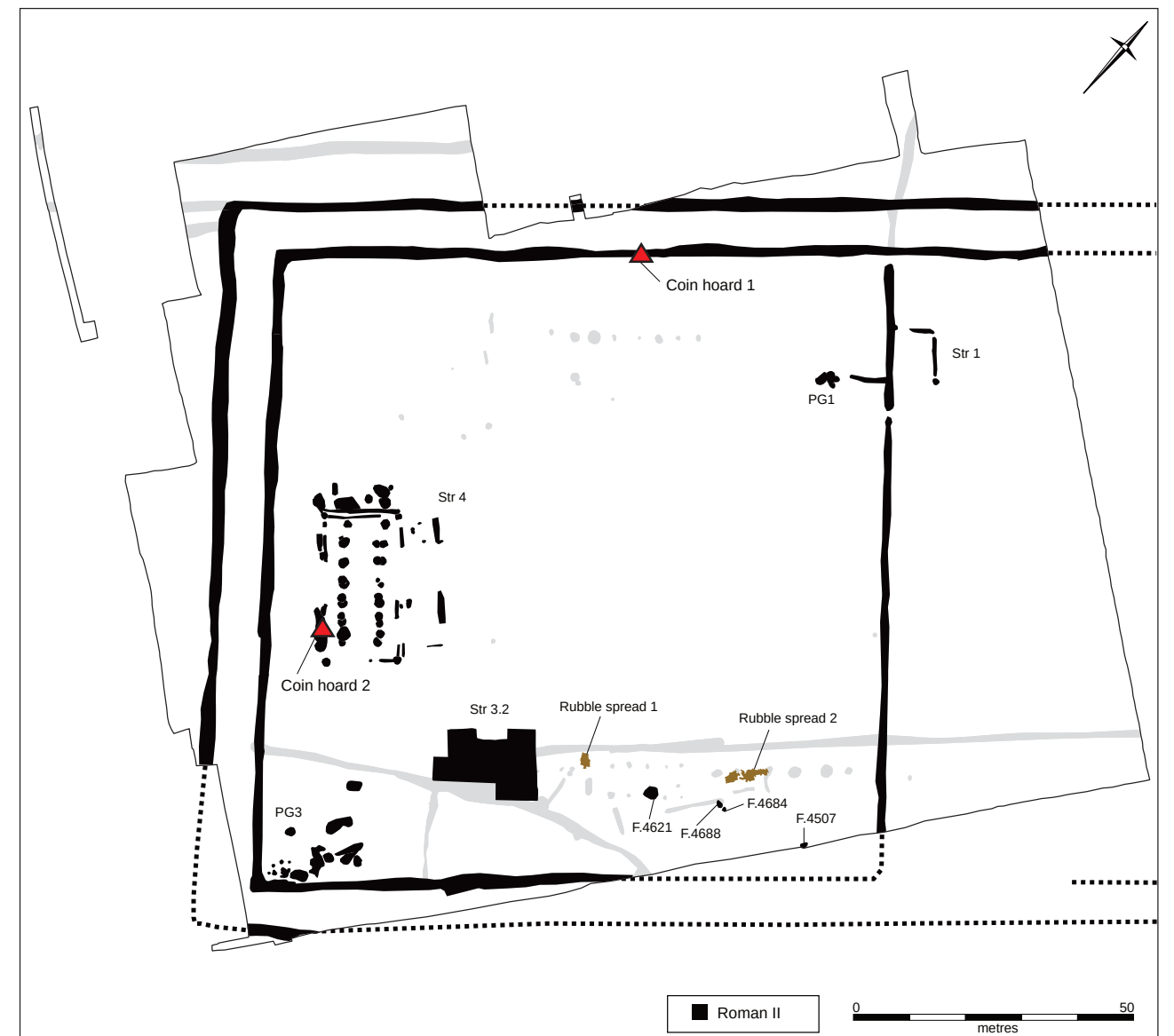


Figure 16. Roman II phase plan

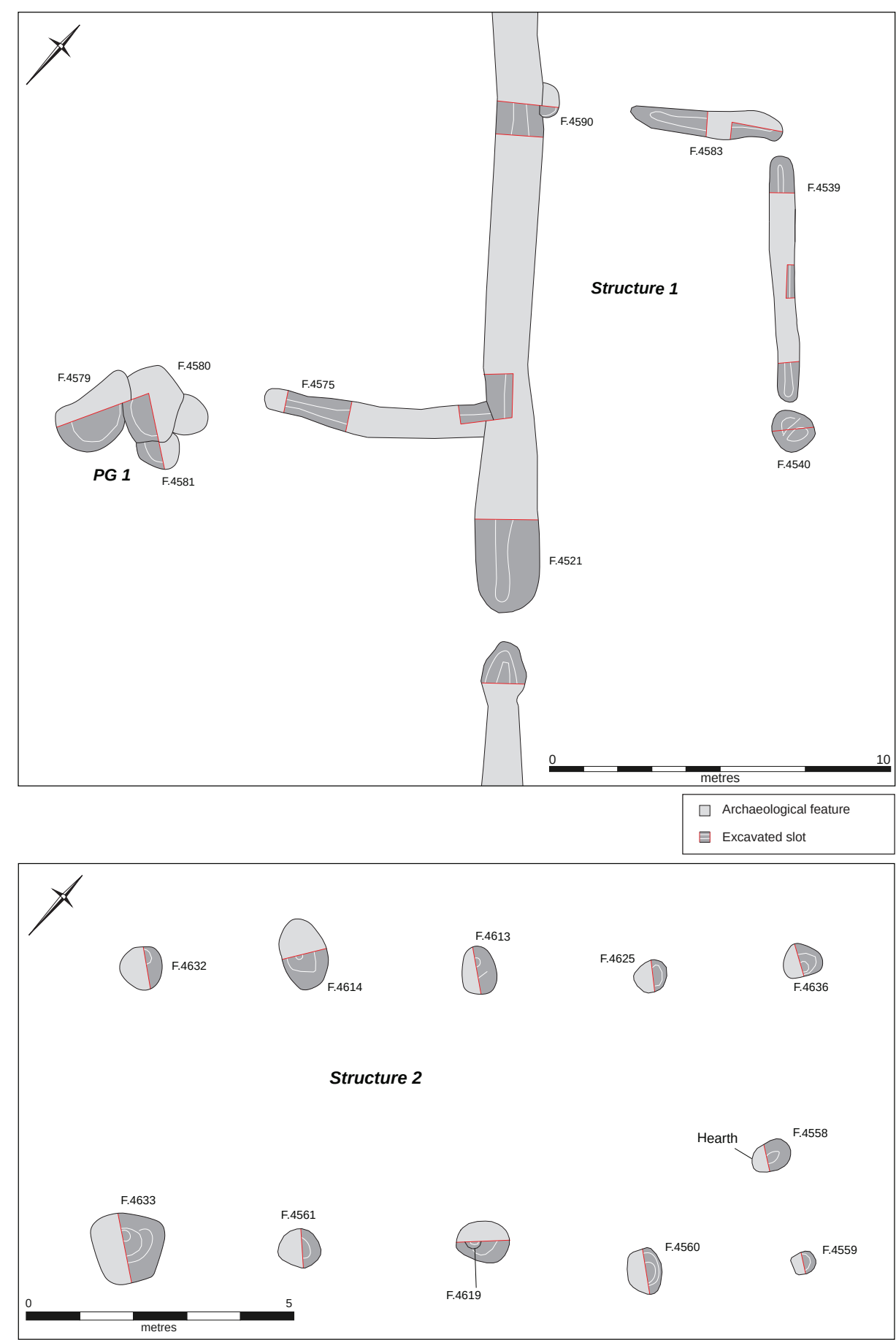


Figure 17. Structures 1 and 2

ROMANO-BRITISH

Structure 1

This was rectangular, oriented northeast-southwest and formed on three sides by gullies F.4538, F.4539 and F.4575 and pit F.4590, extending over an area of 21 x 8m (Fig. 17). These were 0.55-0.75m wide, up to 7m long and 0.14-0.27m deep. On its northwest side, F.4583 and F.4590 were filled with pale clayey silt; gullies F.4539 and F.4575 on the northeast and southeast sides contained dark grey clayey silt with charcoal flecks. A circular pit, F.4540, lay directly southeast of the alignment of gully F.4539. It was 1m diameter and 0.33m deep, with a flat base and straight vertical sides. Amongst the finds, fully summarised in Table 13, were two fragments of rotary quern, fragments of a plain glass bead and window glass, and almost 3kg of CBM (129 items), including slate roof tile, *tegulae* and *tesserae*, almost all from pit F.4540 (118 items). (Pit Group 1 was located at the southeast corner of Structure 1 and, possibly an outcome of related activities, is also included in Table 13 for comparative purposes.)

Feature	type	Pottery	Animal bone Wt (g)	Glass	Shell (g)	CBM (g)	Tesserae	Metal	Rotary Quern
4539	Gulley	52	112	.	.	6	1	Fe Nail; Cu vessel	.
4540	Pit	52	1064	1 (vessel)	35	2323	2	Fe Nails (x4)	1
4575	Gulley	28	228	1 (bead)	.	112	.	Fe Nail (x2); Fe hobnail; Cu strip	.
4583	Gulley	.	.	.	.	.	.	.	.
4590	Pit	.	.	.	.	.	.	.	.
Sub-Total		132	1404	2	35	2441	3	10	1
4579	PG1	8	77	.	18	.	.	.	1
4580	PG1	27	158	.	.	499	.	.	.
4581	PG1	3	.	.	10	.	.	.	.
Total		170	1639	2	63	2940	3	10	2

Table 13. Quantity and weight of finds from Structure 1 and PG1.

Feature	Pottery no.	Animal bone Wt (g)	Shell (g)	CBM no. / wt (g)	Tesserae	Metal
Upper deposits	118	1364	134	23 / 966	4	7 iron nails
Basal deposits	39	1256	44	5 / 952	.	2 iron nails
Total	157	2620	178	27 / 2069	4	9

Table 14. Summary of finds from ditch F.4521.

By their stratigraphy, there was no obvious relationship between enclosure-partition ditch F.4521, gully F.4575 and pit F.4590. Either by type or frequency, there was also little to differentiate between the assemblage of material from the ditch's basal and upper fills (Table 14), which might otherwise have indicated whether the structure was in use as a two-part division either side of, and contemporary with, the ditch or if one entirely predated the other and, if so, in which order. That said, on the northeast side of the ditch, F.4539, F.4540, F.4583 and F.4590 were arranged at (straight) right-angles. Delineating a 7.5 x 9m 'rectangle', they definitely seemed building-related; whereas on the ditch's other side, F.4575 was slightly curvilinear. Accordingly, although 'associated', the latter is unlikely to actually have been part of the structure and might instead have related to the entranceway across the partition boundary at this point. Thus, given its small size, Structure 1 may well not have had a significant residential function. Perhaps no more than a shed-like setting, the finds from its features probably derived from the main ditch's dumped infilling.

Structure 2

Located northeast of Structure 3, two parallel rows each of five postholes on a southwest-northeast alignment defined a central nave to a 6.0 x 20.0m rectangular building (Table 15; Fig. 17). The postholes ranged in depth from 0.16m to 0.84m. Filled with dark grey silty clay, post pipes with a diameter of 0.25m were evident in F.4559, F.4561, and F.4620, central to a packing of yellowish brown clay. Few other building materials were present in the postholes, with a total absence of mortar; however, 2859g of plain wall plaster with wattle impressions came mainly from postholes at the building's southwest end. Clearly an aisled building, amongst the few other items recovered were iron nails and, in posthole F.4614, a mid 3rd-4th century AD copper alloy bracelet. A possible hearth F.4558 was situated at the centre of the northeast gable. This was an irregular shallow hollow c. 5cm deep and filled with black charcoal-infused silt at the centre of a halo of scorched reddish clay.

Feature no.	Depth (m)	Pottery	Animal Bone (g)	Metal	Shell	Glass	Worked bone.	CBM (g)	Tesserae	Wall Plaster (g)
4559	0.22	1	13	Fe x1	.	.	.	.	.	.
4560	0.16	2	.	Fe x1	2	.	.	.	.	.
4561	0.20	.	16	Fe x1	.	.	.	491	2	.
4613	0.63	3	8	Fe x1	.	.	.	.	.	.
4614	0.73	5	9	Fe x3 Cu bracelet	6	1	.	131	8	788
4620	0.30	1	51	.	.	1	.	.	.	.
4625	0.29	.	.	.	.	.	.	22	.	.
4632	0.48	1	.	.	.	.	.	48	56	642
4633	0.84	5	22	Fe x1 Fe fitting	1	1	1	44	3	1429
4636	0.48	3	.	.	.	.	.	25	1	.
TOTAL		21	119	10	9	3	1	761	70	2859

Table 15. Features and finds of from Structure 2 by quantity and weight (g).

Structure 3 and the Feeder Ditches

Constructed of stone and masonry, Structure 3 was 18.5m long, 13m wide, and comprised five main areas or rooms (Rooms 1-5) that may arguably be further subdivided into others (Figs. 18 & 19). The building clearly underwent at least one phase of significant modification. Its first phase (Structure 3.1) contained elements to suggest that it primarily functioned as a bath-house: a hot room, a warm room and a plunge bath. Modifications observed within a number of the rooms suggest that in the building's second phase (Structure 3.2), its hypocaust system was decommissioned and its reduced-level portions infilled for the setting of ground-level floors; a greater frequency of domestic refuse indicates the building's heightened domestic role thereafter. There are hints that much of Structure 3.2 was of a shallow pad construction; if so, then a great deal of the detail pertaining to this second phase was lost both to robbing and post-Roman agricultural disturbance. Most apparent from Structure 3.2 was its winged frontage redolent of a villa design.

In addition to furrows, plough or sub-soiling scars and field drains that crossed the footprint of Structure 3, modern wheel ruts resulting from dumper vehicle runs observed and redirected in 2014 were also evident along the building's northwest

range. Containing structural debris mixed with dark topsoil, these reached depths of up to 0.3m and had clearly modified the uppermost demolition horizon and impacted upon surviving structural elements. These intrusions hindered visibility of relationships between shallow features at ground level.

Oriented northeast-southwest lengthwise, the building's northwest range was structured by two main elements, including an unusual horned arrangement of foundation trenches (Room 1a), perhaps to form an entrance portico. Partly overlapping the north and south sides of this were two projecting wings. It is not clear if these were later additions to the building's west 'frontage' or contemporary with the portico arrangement. Three postholes underlay the north wing, at least one preceding it. The deep-floors of Rooms 3 and 4 provide the clearest evidence that the building served as a bath-house, with a hypocaust in Room 4 heated by a furnace in Room 5. Water was delivered to the building by Feeder Ditches channelled from a natural spring to the northeast.

The floors of Rooms 1 and 2 were laid directly on the natural clay, and the site's assemblage of *tesserae* indicates that some of the rooms were surfaced by tessellated pavements. Their walls were built in foundation trenches between 0.2 and 0.55m deep, but were entirely robbed, except for rare instances of the lowest course of basal footing surviving to a width of c. 0.6m.

The floors to Rooms 3 and 4 were reduced into the natural clay to 0.55m below the ground surface, with a base layer of cobblestones impressed into the soft clay. The walls were constructed upon the cobblestones, following which various layers of mortar were poured, serving in two parts of Room 4 as a foundation to hypocaust *pilae*; one part of this was connected to a stoke-pit structure in Room 5. Evidence suggests that cavity walling was employed, and further detail concerning the building's walls was forthcoming from a large fragment of displaced brick lacing, in which three surviving courses had been cemented to a rubble core. Plaster, painted white with red stripes, had been keyed to the brick surface, showing this to have faced into a room's interior.

Prior to the building of Structure 3.2, the Feeder Ditches may have been deliberately infilled. The walls to the southeast side of Rooms 3 and 4 were removed and re-erected (this may have been required repair work owing to the proximity of the Structure 3.1 walls to the open ditches), extending Room 3 by 1.25m. The interior of Room 3 was infilled with rubble, presumably to facilitate a new floor surface at ground level, though no traces of this survived. This may also have occurred in Room 4a, and was clearly evident in Room 4b where the hypocaust was entirely infilled with CBM rubble and capped with puddled clay for a new floor.

A timber structure and cobbled surface within a reduced area on the building's southwest range comprised the first element to Room 5, where also the Feeder Ditches turned towards the building. These lower layers could not be fully investigated, and so full clarity of this relationship was not attained. Here, as the timber structure and cobbled surface were succeeded by a stoke-pit structure, the Feeder Ditches gradually became a depository for spent fuel, with which they were eventually infilled and then overlain by a stone and clay floor that may also have been covered by a structure of some means. The stoke-pit structure was probably dismantled when the Room 4b hypocaust was infilled.



Figure 18. Structure 3



Figure 20. Structure 3 rooms (above) and slots, (below)

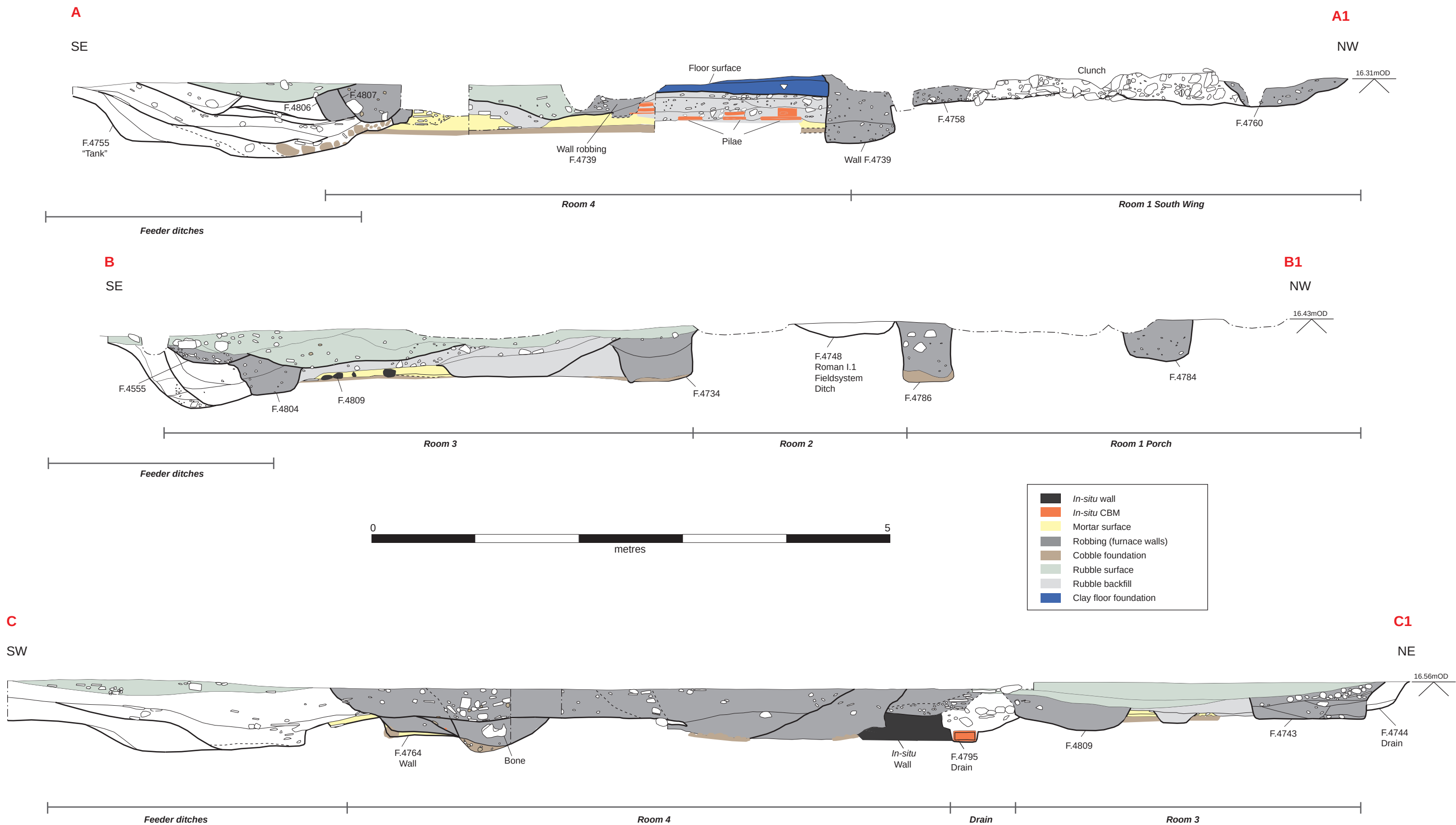


Figure 21. Structure 3 profiles (see Fig. 20 for section plan locations)

There was little evidence by which to date the building's phases of construction and use. Much of the CBM appears to have been brought to the site reused from other, older buildings. Only three of six coins were datable. Coming from rubble layers [16698] and [16745] that filled parts of Rooms 3 and 4, the coins were minted between AD330 and 341, which may tentatively provide a *terminus ante quem* for the building's initial construction. A coin of AD364-378 was found within the rubble fill of the building's winged frontage, which may indicate the building's ultimate demise.

The overall extent of Structure 3 may have been greater than its surviving traces, which is suggested by features such as the possible gulley wall footings described below (see *Small Ditches and Gullies*).

Unless stated otherwise, room dimensions are measured from between the inner face of robber trenches or surviving wall foundations.

Unattributed

Within the building's northeast range, gulley F.4626 projected beneath Room 1e (the building's north wing) and continued east towards pit F.4623, which itself was cut by the Feeder Ditch, F.4509. As outlined below, the ditch had a direct relationship to Structure 3.1. Pit F.4623 is considered in more detail with other nearby features in *Other and Isolated Features*. With a consistent depth of 0.36m, a width c. 0.55m, gulley F.4626 produced a small assemblage of animal bone (314g), pottery (27 sherds) and shell (4). Its alignment and early place in the feature sequence could situate this suitably with the pre-enclosure fieldsystem, possibly connecting with ditch F.4648, but these generally lacked material culture (none coming from ditch F.4648) and gulley F.4626 also contained 20 tesserae with a small but definite assemblage of 17 items of ceramic and stone building material (3502g) – *pilae*, *tegulae*, box-flue, a roof slate – with small lumps of mortar and chalk mixed within its pale greyish brown silty clay fill. It is more likely, therefore, that they gulley was a structural feature, possibly a drain, serving an undefined element of Room 1.

Room 1

Taken together and covering the building's entire northwest range, the entirety of Room 1 extended over 5.0 x 15.6m. Its horned arrangement was fronted by an 8m-long gulley (F.4784) connected to its main west wall (F.4757 & F.4786) by two 1.5m long and parallel footings (F.4785) spaced 1.2m apart. Room 1a was a rectangular area of 1.2 x 1.5m (1.8sqm) at the centre of this arrangement. The wall footings were 0.2-0.3m deep and robbed of all construction material except for patchy remnants of the cobble foundation. Being 0.2m shallower than the robbed footing of the building's west wall, these were clearly distinct from each other as construction features.

Gulley F.4784 extended 2.4m north of Room 1 and 3.0m south. A wing projected from each end of the range, overlapping the gulley to form Room 1b and Room 1c, each within 21.-21.4sqm. Both wings were c. 5 x 5m in area and defined by a perimeter gulley 0.2-0.35m deep, probably from robbing of a wall, that enclosed a central area of 2.5 x 2.5m in the south (Room 1d) and 3 x 3m in the north (Room 1e). These, too, had been reduced at their centre to a depth close the gullies. Patchy remnants of an uneven bed of cobblestone impressed to the exposed natural clay was evident in each of the wings and was covered by a compact mix of clunch and stone, crushed mortar and mid-greyish brown silt. A coin dated AD 364-378 was found in the rubble core of Room 1d.

Three postholes were encountered within the base north wing gulley. Postholes F.4779 and F.4788 were filled with crushed mortar, and on the base of F.4788 was a flat sandstone pad. There was not clear enough distinction between the fills of the postholes and the wing to elicit their sequence. In contrast to this, posthole F.4787, which appears earlier in the sequence, was overlain by deposits filling the wing's gulley and central hollow that contrasted with the posthole's fill of blueish redeposited clay.



Figure 22. Room 3 (looking south) fully excavated (top); Room 3 Phase 2 pad construction over feeder ditch *in-situ* (bottom left) and in section (bottom right).

Room 2

Covering 2.2 x 4.55m (10.01sqm), no *in situ* floor surfaces were present in the exposed natural clay of Room 2. The wall foundations had been entirely removed by robber trenches F.4645, F.4734, F.4737 and F.4786, these being 0.55-0.95m wide and 0.3-0.55m deep. In the context of a bath-house it is possible that Room 2 functioned as a reception or cloakroom (*apodyterium*).

Room 3 - Structure 3.1

Comprising 3.8 x 4.6m (17.48sqm), the floor of Room 3 was cut through the natural clay to a depth of 0.55m (Fig. 22). A base layer of cobbles ([17291]) survived in patches, though evidently had covered the entirety of the room's footprint. The walls had been constructed directly upon the stones, following which two layers of mortar were poured over the room's enclosed interior space of 2.0 x 3.22m (6.44sqm). This was heavily denuded, but consisted of an underlay of soft and friable mid yellowish orange mortar slurry ([16764] & [17175]), with mid-size stones and clunch from a range of geological sources, many reduced to an appropriate size. This was covered by a second layer of mortar, less friable than the first and dark reddish orange in colour, with patches inset with large irregularly-shaped fragments of tile ([16762-3]) or having tile fragments inclusions ([17174]).

Of the walls, only four large stones (F.4809) survived *in situ*, set in line within a mortar bond on the room's southwest side. The wall was 0.6m wide, although robber trenches up to 0.95m wide were recorded on the room's northwest and northeast sides (F.4745). These contained tip-lines of mid grey or mid orange clayey silt with varying degrees of crushed mortar and demolition rubble that represented a single robbing event. The northeast robbing trench was capped by a dump of large clunch blocks and CBM ([16766]), which was also visible to a lesser degree in the northwest robbing trench. Large lumps of moulded mortar cement, some displaying tile impressions, that would have sealed the joint between the floor and the walls, were collected from this deposit in the room's northeast corner, and were assigned a separate context, [16767].

On the room's southwest side, a 0.6m wide wall-robbing trench (F.4804) was found to cut through the complete fill sequence of the final 'Feeder' ditches (the east edge of F.4509). When open and active, the ditches' close proximity to the wall would evidently have risked undercutting of its foundation, as seen in Room 4 (see below). The main fill of the ditches ([16158], dark grey silty clay) merged with a 0.3m deep drainage gully, F.4744 (0.3-4m wide) that ran along the outer edge of F.4743, the room's northeast robbing trench. This presumably acted as a means of drainage, perhaps carrying overspill from Room 3, emptying into the Feeder ditches.

In Room 3 the presence of moulded mortar – a form of waterproof cementing – in combination with the drainage channel may be instructive to assigning its use in a bath-house, perhaps as a *frigidarium* or cold plunge. The bath-house in Feltwell, Norfolk, is a useful comparison, as it too contained a tile drain cut through the external wall of a *frigidarium* towards an external gully (Gurney 1986, 11). Similarly, the cold plunge in the bath suite of an aisled building at Bancroft, Essex, located adjacent to the *frigidarium*, was lined with inverted *tegulae* laid in *opus signinum* over a mortar and rubble footing, that was drained by a lead pipe to an external gully feeding into a trackside ditch (Williams and Zeepvat 1994, 139-40). There, in the bath suite of a later building, a plunge bath with plaster walls decorated with marine scenes was lined with *opus signinum*, with a tiled drain that passed through a wall and towards an external ditch (*ibid.*, 167).

Room 3 - Structure 3.2

Infilling of Room 3, with the remodelling of its southeast wall, represents the main distinguishing features of Structure 3.2. This occurred after removal of a considerable portion of the room's floor surface, which cut into the underlying mortar foundation leaving voids filled with remnants of crushed silty mortar ([17115]). The room was then filled with a substantial 0.4m thick deposit of fairly loose yellow and pink sandy mortar, stone and CBM ([16761]), which included painted plaster. This was overlaid by deposits of more 'soily' and moderately compact rubbly silts – [16249]/[16745] and, to the room's northeast corner, [17142] – mixed by Post-Medieval agricultural activity.



Figure 23. Top: Room 4, looking south. Room 4b hypocaust in foreground; Room 4c top left. Bottom: drain F.4795

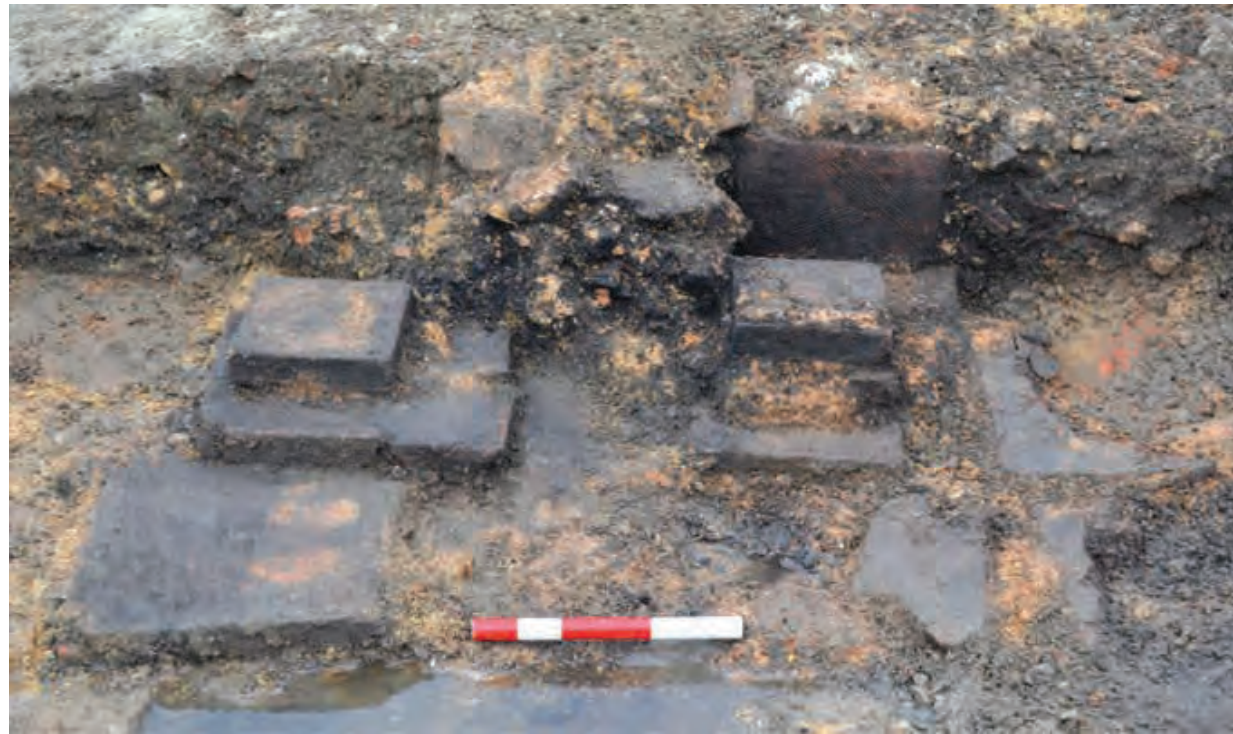


Figure 24. Top: Room 4b hypocaust repair and rubble infill. Bottom: Room 4c hypocaust, flue and furnace



Figure 25. Top: Room 4c with rubble-filled hypocaust overlain with floor clay foundation. Bottom: Room 4c rubble-filled flue overlain with floor clay foundation

Although not visible in the uppermost horizon, it was thereafter clear that the walls' robber trenches cut Room 3's interior backfill. The walls could, in theory, have been removed after some, potentially lengthy, time following the building's use, the room's infill simply being a consequence of gradual dilapidation. However, a clearly deliberate rubble backfill was part of the modification of Room 4b (see below), and in Room 3 a modification of the southeast wall occurred when the Feeder Ditches were no longer in operation, which would imply that the substantial quantities of water required for a bath-house were no longer a necessity and that the deep floor of Room 3 was likely replaced with a new and more suitable ground-level surface. Unfortunately, the relationship of the room's southeast wall to the infill was inconclusive for Structure 3.1, but the wall's infilled robber trench (F.4804) was cut by the robber trench of the wall's extension in Structure 3.2 (F.4555). The northeast corner footing of the Structure 3.2 wall was all that survived *in situ*, cut into the Feeder Ditches' infill. There, a broad 0.3m thick pad foundation (F.4555) comprised fragmented brick, clunch blocks and unworked stone bonded in mortar (Fig. 22). This extended the length of the room by an extra 1.25m (to c. 5.85m).

If pad-construction was the main structural characteristic of Structure 3.2, then little may have survived later agricultural activities. A few metres north of Room 3, circular post pad F.4793 comprised 0.1m thick degraded mortar to just 0.5m diameter; its survival may have been entirely fortuitous.

Room 4

This encompassed a maximum area of 3.6 x 4.2m (15.12sqm). It was partitioned into three sub-portions, of which Rooms 4a and 4b contained hypocaust *pilae*. Room 4c may represent a later modification of the main room's interior, which, ultimately, saw two primary phases of use.

As seen in Room 3, at a depth of 0.55m a layer of cobblestones ([17267]) was impressed into the basal soft clay. The walls were constructed upon this. The room's four main walls, F.4736-7, F.4757, F.4764 and F.4806-7 were robbed, except for two courses of moderately large, faced or roughly dressed stones in orange sandy mortar in F.4736; combined with the robbing cut visible in section, wall F.4736 was less than 0.85m wide. Part of the cobble foundation, and perhaps also the base footing of wall F.4806 on the room's southeast side, had at some point eroded into the base of the open Feeder Ditch system (F.4769, [17266]), presumably weakening the integrity of the wall that was subsequently replaced with wall F.4807, reducing the room's length by 0.35m.

Environmental samples from deposits within the hypocaust were largely barren, and illustrate maintenance of a relatively clean state within the building.

Room 4a

Management of surface-water accumulation was initially enabled (or attempted) by drain F.4795. Formed of seven horizontally laid Type 1 box tiles (see *Ceramic Building Materials*), the drain was set in a recess between the walls of Rooms 3 and 4, projecting from a gap in the base of wall F.4737 and discharging into the open Feeder Ditches. Dark grey silt entirely filled the drain and the gap in the wall ([16783]), and spread over part of the room's interior mortar ([17440]).

Surviving across two-thirds of Room 4a was a 0.11m thick layer of pinkish-orange mortar slurry ([17439]) that had been poured over the basal cobblestone surface (Fig. 23). Upon this, and seemingly occupying the room's entirety, were hypocaust *pilae* surviving in two groups comprising three rows of six pillars spaced c. 0.1m apart. Reused *tegulae* were employed for each base, four of which carried one and two courses of *bessalis* bricks. Slight mis-alignment between the two surviving *pilae* groups may indicate different phases of repair work within the hypocaust. The dark silt that accumulated on the mortar around drain F.4795 was sealed beneath a second skin of mortar ([17440]), upon which four additional *pilae* bases were installed (Nos. 1-4). On two of these were one and two courses of *bessalis* bricks; at the centre of another, used as a pillar, was a complete Type 2 box-flue deliberately filled with a solid mix of mortar and stone. Owing to the second mortar layer, the bases of these pillars were c. 50mm higher than in the first. Their insertion was most likely as a repair to the existing hypocaust. This may have coincided with the decommissioning of drain F.4795, which included filling of the gap in the wall with clunch blocks.

Following removal of the suspended floor, various deposits filled the interior of Room 4b, although a significant swathe of deposits from the centre of the room had been removed by furrow F.4549.

Around *pilae* Numbers 1-4 (suggested above to be illustrative of repair works), and overlying the dark silt [16783] that accumulated at the head of drain F.4795, was a rubble dump of mortar and plaster (some painted), 124 tesserae and 49,039g of CBM, almost half of which was box-flue and *pilae* fragments ([16780]; Fig. 24). This deposit was truncated on its north and west side by an irregular cut containing dark greyish brown silty rubble up to 0.3m thick ([16698]). The cut had penetrated the floor mortar, exposing or removing the underlying cobblestones; the remaining hollows were filled with dark grey silt ([16747]) and the cut was infilled with a swathe of rubble ([16698]) that extended into Rooms 3 and 4c. Containing over 41,175g of retrievable CBM and a quantity of building stone fragments, deposit [16698] was clayey silt mixed with a powder of fine degraded building material that relates to the building's robbing and demolition. Although it is possible that rubble deposit [16780] also derived from the building's robbing and dilapidation, its encasement, in effect, of *in situ* hypocaust *pilae* suggests also that this may have been part of a deliberate infilling of the room's interior as to create a foundation for a ground-level floor, perhaps as part of the Structure 3.2 remodelling.

Room 4b

This comprised a uniform arrangement of four rows of four *pilae*, covering an area of 2 x 2m, linking with a furnace in Room 5 on its southwest side (Fig. 24). Its northwest side was bordered by the main wall F.4757 of Room 4; its northeast and southeast sides comprised (furrow-disturbed) wall-robber trenches F.4735 and F.4739, both of which may have been later additions to a formerly open Room 4 interior.

Of its 16 pillars (Nos. 8-22), at least 12 bases were cut from Type 2 box-flues, eight of which held between one and four courses of *bessalis* bricks. Three pillars (Nos. 17 & 21-22) were built of three to five courses of *lydion* bricks that formed two sides of a 0.45m wide central flue. The mortar surface at the centre of this arrangement ([17396]) was reddened and hardened by the heat and fuel emissions from the furnace, and was covered by a 0.1m thick accumulation of black silt ([17217] & [17219]). This had blackened the flue-side face of the pillars and the mortar surface outside of the central channel. A stoking hollow between the furnace and the flue was bordered on one side by a *bessalis* brick laid on its vertical edge against a stack of two horizontally laid *bessalis* bricks set directly into scorched mortar. Raking-out of spent fuel within the hollow had exposed the underlying cobblestone foundation.

Decommissioning of the Room 4b hypocaust occurred with removal of its suspended floor and, without dismantling the hypocaust pillars, filling of its interior with 0.2m-thick rubble dumps - [17215], [17216], [17218], [17387-89] and [17392-93] - near to the top of the pillars, comprising reddish-orange mortar and 46,307g of CBM, including 265 *tesserae* (Fig. 25). This included ten fragments of painted plaster, six of which came from the uppermost of these layers ([17215] & [17387]); one large fragment (Cat. No. 1699) displayed two separate layers of painted plaster, showing that at least one event of redecoration had previously taken place. With glimpses of a thin pinkish sandy mortar (CBM-free) underlay, capping these deposits was a 0.15m thick layer of firmly rammed pale blueish grey marly-clay ([17213]. This was pierced with plough scars and a ceramic field drain that had all but removed a capping layer of friable degraded silty mortar ([17213]) surviving in 4cm-thick patches; no actual floor surface was present.

Room 4c

This was different in character than Rooms 4a and 4b, most obviously for its lack of hypocaust. At only 0.9 x 1.2m, its interior was small and defined by the main Room 4 southwest and southeast walls, F.4764 and F.4806-7. As suggested for Room 4b, this may have been a later addition to a once-open Room 4 interior, but robbing of the majority of its walls, as well as subsidence into the Feeder Ditches, left little material possibility to confirm this sequence. The base of the north and east walls were, nonetheless, partially intact with mid-sized flint nodules, some worked into roughly faced cubes.

The partially surviving floor of the room's interior was paved with fragmented bricks, probably from the *lydion* type, which lay roughly at the same height as the pillar bases of Room 4b. Traces of mortar on the top surface of the bricks may indicate that this was a foundation rather than an actual floor surface. There was no western half to this foundation, which may have been robbed (as represented by ovoid hollow F.4765, which appeared to have been cut from high in the building's deposit profile).

Room 5

This ‘room’ is described in two parts, 5a and 5b, which at least correspond with division of the area’s later spatial character. Full investigation of the deepest underlying deposits of Room 5b was not possible; therefore, a full appreciation of its complex sequence of features may only be assumed.

The entire area of Room 5 was set within a sub-rectangular area (3.2-3.5 x 4.7m, [17436]) sunk into the natural clay to a depth of at least 0.15m to 0.4m. Seemingly associated with manual activities, its features were multi-faceted in character, key elements of which are individually described below. The first component was cobbled surface ([17319]) with a timber-supported structure in use with the open Feeder Ditches. A stone wall-enclosed stoke-pit connected by a flue to the Room 4b hypocaust was subsequently built and comprises Room 5a. Once in-filled, the Feeder Ditches were sealed by a clay-capped stone rubble floor that defined Room 5b, and was presumably sheltered by some means.

Timber Structure and Cobblestone Surface

A cobbled surface was laid onto the exposed natural clay and mixed with dark and mid-grey clayey silt ([17319]). This extended from wall F.4764 exterior to Room 4 and slumped into the edge and base of Feeder Ditch F.4754, which , with F.4768 (its precursor ditch), turned westward towards the reduced area. The cobblestones encircled a 0.25m-diameter posthole, and 3m from this a second posthole (F.4808) was located on the edge of the reduced area; both were cut to 0.32m below the ground level.

Stoke-pit (Room 5a) and Stone & Clay Floor (Room 5b)

This comprised sub-rectangular pit F.4800 (1.3 x 1.5m), with a depth of 0.75m from the ground surface (some 0.3m deeper than the reduced area of Room 5). At the top of its northeast side was the scorched clay surface and raked-out stoking channel from the hypocaust flue of Room 5b. At the top of the pit’s southeast side was a step, 0.4m wide, 0.2m deep, at the centre of which was a 4cm deep shallow channel ([17334]) filled with a mix of clay, black silt and charcoal. This was aligned with the raked-out Room 4b stoking channel, although the base of [17334] was *c.* 0.1m lower. At each side of the step were remains of a rudimentary mortar-bonded stone pad foundation ([17333]) set directly into the natural clay; a trail of stones and mortar was displaced from the step’s southeast corner and into the base of pit F.4800.

Two flat stones on the base of the pit may have been displaced from its west side, suggesting that the pit may have been stone-lined. In support of this, positioned against the inside edge and step of pit F.4800 and central to channel [17334], were two large flat stones set in an upright position. This suggests that the pit and the two raked-out stoking channels were connected components in the heating of the hypocaust system. The base of the pit was covered with a 0.15m thick layer of light grey clay ([17363]) capped by gritty mid-grey silt mixed with fragments of CBM too small for collection ([17337]). Above this, the remaining void was filled with layers of silty demolition material ([17335] & [17336]). This appears to illustrate that the stoke-pit, and any structural components contained within it, had been entirely cleared out when the Room 5b hypocaust was decommissioned; however, a trace of its base superstructure was present around the mouth of the pit on its southeast side, comprising a single course of stone wall F.4775 set within sandy mortar poured directly onto the exposed natural clay; this truncated cobbled surface, [17319].

Defining Room 5b was a dense rubble surface ([17201/17381]) confined to an oval area of *c.* 2.4 x 3.0m abutting the walled stoke-pit structure of Room 5a. This comprised a packed layer of stone with occasional fragments of CBM, amongst which was a fragment of rotary quern (Cat. No. 10896). White clay was puddled over the rubble to a maximum thickness of 7cm ([17190]). There was no remnant of a surrounding stone or timber wall, but the distribution of the stones ceased within 0.4m of the area’s main cut ([17436]), which conceivably could have housed a basic structure.

Projection of Feeder Ditches F.4754 and F.4768 extended beneath the stone and clay floor, which clearly abutted against the stoke-pit structure. What remains uncertain is the exact nature of any

relationship of the Feeder Ditches to pit F.4800’s step-located channel. There evidently was a build-up of deposits on the ditch-side of the stoke-pit structure, and the presence on its step of the rake-out channel suggests that spent fuel was deposited into this area and perhaps into the Feeder Ditches, evidence for which was visible in the frequency of charcoal and kindling recorded from the ditches’ environmental samples (see *Environmental Analysis*). It is, therefore, unlikely that delivery of water towards Room 5 was in service at this time, even if this had occurred when the [17319] timber structure and cobblestone surface was in operation. This was evidently the case when the stone and clay floor was laid; these issues are returned to below.

Water Supply and Drainage

Assigned to Feature Group 5f, the Feeder Ditches extended northeast-southwest as a single ditch, F.4509, from beyond the limit of excavation towards Structure 3 to a depth of 0.75-0.82m (1.8m wide at its top and 1m across at the base; Fig. 26). To the rear of the building the ditch underwent at least three major episodes of re-cutting – F.4509, F.4754 and F.4761/F.4768-9 – extending to a maximum width of 2.5m. The ditches delivered water supply to Structure 3.1, as well as controlling the structure’s outflow; they were at least partially infilled prior to Structure 3.2’s establishment.

The Feeder Ditches would have channelled water downslope from the natural ‘copse’-spring, a little over 400m to the northeast, south of the Traveller’s Rest Sub-Site (Evans 2015; Fig. 27). A similar means of water supply was recorded at Wendens Ambo on the Cambridgeshire-Essex border, where a series of ditches and tile-lined drains led from a hill towards a bath suite (Hodder 1982, 18-19), presumably from a spring-source. There was no evidence that the ditches were lined or revetted at Site VII.

There was no obvious means by which the inflow of water was managed from the spring or into the building. The site’s cut lead fragments and casting waste may have derived from lead piping and water-boiling or -storage containers, for example. An early feature of the Feeder Ditches, at the very rear of the building, was a rectangular cut, F.4755, 0.65-0.75m deep and 5.3m long, aligned with and situated on the east side of the Feeder Ditches and central to Room 4. Its mollusca included both freshwater and marsh species. This may have been a tank for water storage. A possible comparison could be made with Beauport Park, East Sussex, where, at the bottom of a slope near a bath-house, a substantial wooden tank (at one time lined with lead sheet) was interpreted either as a water tank or some form of bath (Brodrigg and Cleere 1988, 236-8). However, ‘tank’ F.4755, once infilled with three layers of silty finds-free clay, was truncated by a recutting (F.4509) of the Feeder Ditches, and some other means of water provision must have then evidently been employed.

Rectangular pits F.4781 and F.4790 may also have been connected to the building’s water delivery. These were 0.8-1.0m long and 0.52-0.65m wide and, unlike ‘tank’ F.4755, were flush to the building’s axis. Pit F.4781 was cut into the base of Feeder Ditches F.4754 and F.4768 to a depth of 0.35m, its sides partially lined with large flat stones. Within its fill of dark grey clayey silt were at least 36 large stones, some roughly squared to shape and a few burnt. Pit F.4790 was cut to a depth of 0.85m from the reduced surface of Room 5 ([17436]). It too contained a mass of large stones, within a mixed yellowish brown and light grey silty clay, that was part of a broader spread that also filled Feeder Ditch F.4768 ([17202]), which with ditch F.4754, turned westward towards the timber structure and cobblestone surface [17319]. The silty clay spread [17202] may have been deliberately laid to decommission both the pit and ditch, and to consolidate the ground, and was subsequently cut by a ‘fresh’ replacement ditch, F.4754. The pits and Feeder Ditches are therefore likely to have been concurrently in use. Although direct water storage within the pits may not be discounted, their volume-capacity was minor. They may, alternatively, have supported structural timbers as part of a water haulage and transport system.

The Feeder Ditches were also utilised as drains with off-shoot ditches and gullies extending from Structure 3.1, reducing in depth to 0.25-.35m to the southwest (ditches F.4509, F.4630 & F.4631) and, in the southeast, gullies F.4556 and F.4522. (Seemingly conjoining with the inner enclosure ditch – which the Feeder system otherwise pre-dated – the latter gully might represent a Phase II internal division.) Pit F.4562 may have been used as a sump at the far end of the southwest gully, into which pottery, bone, CBM and worked stone (including two fragments of column base and a reused prehistoric rubber stone), appeared to have slipped from the gully terminus. Once infilled, the pit was subsequently cut by the enclosure-compound’s inner ditch.