



Environmental Statement – Volume I Main Text

Lanwades Woodland Park

May 2025



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STATEMENT OF COMPETENCE

A summary of the relevant experience and qualifications of the Technical team's involvement with the Environmental Impact Assessment is outlined below.

Eve Campell is a director at hgh Consulting, an Associate of the Institute of Environmental Management and Assessment (IEMA) and a Member of the RTPI, and as such is a 'competent expert' as required by the EIA regulations.

The Air Quality Assessment has been prepared by Stuart Michael Associates Limited, who have worked on a myriad of projects where air quality has been of consideration. The projects range from small residential developments to mixed use developments comprising 1000's of units.

This Chapter has been produced by Jason Mills MSc and reviewed by Stewart Andrews (Director) who has over 10 years of experience in preparing ES air quality chapters.

James is an Associate Director in Cannon Consulting Engineers and has a BSc in Applied Geology and a MSc in Environmental Water Management. James has more than twenty years experience of the flooding and water management industry working as both regulator (in the Environment Agency) and for private practice.

The Ecology chapter has been produced by Claudia Ferreira BSc (Hons), QCIEEM, a Senior Ecologist at Sweco with over four years of experience in ecological consultancy. Claudia has extensive experience providing ecological expertise on large scale residential and mixed used developments and other EIA projects. It has been reviewed by Joshua Stafford BSc (hons) MRSB, Principal Ecologist, with over 14 years preparing Ecological Impact Assessments for EIA and Approved by DR Martin Brammah PhD MA (Cantab) BA (Hons) CECOL MCIEEM MRSB, National Ecology Lead, who has over 18 years preparing Ecological Impact Assessments for EIA.

The built heritage chapter has been prepared by Montagu Evans LLP. The Chapter has been written by Tim Miles, a Partner in the built heritage and townscape team who has a Diploma in Planning Studies, an MA in Planning Research, and an MSc in Building Conservation. He has 17 years' experience advising on development within the historic environment, and preparing built heritage assessments for EIA including those affecting sensitive land. He was assisted by Alexandra Rowley, who has an MA in the Archaeology of Buildings and nine years' experience advising on development within the historic environment including the preparation of built heritage assessments for EIA, including housing development.

The landscape chapter has been written by Elizabeth Bryant, a chartered member of the Landscape Institute and director of Bryant Landscape Planning Ltd, a registered practice of the Landscape Institute. As a member of the Landscape Institute, Elizabeth is bound to comply with its Code of Practice which ensures that she only undertakes work which she is professionally competent to undertake and that she maintains her professional competence in areas relevant to her work. She has worked in the private sector for over 15 years, specialising in preparing landscape and townscape assessments, and her experience includes producing LVIA's as part of the EIA process for a range of proposals including large-scale urban extensions and logistics facilities, tall buildings within sensitive areas and major mixed-use developments. She is an assessor and mentor on the Landscape Institute's Pathway to Chartership, sits on the Richmond Design Review Panel, appears as a landscape expert at planning inquiries and is an external critic for the MA Landscape Architecture and MA Landscape and Urbanism at Kingston University.

The noise and vibration chapter has been prepared by Pedro Novo. Pedro is an Senior Acoustic Engineer at Max Fordham with 17 years' experience in acoustic consultancy. He is a Member of the Institute of Acoustics (MIOA) and holds a MSc in Physics Engineering and a PhD in Mechanical Engineering. The methodology and contents of the chapter were discussed with group members of the acoustic team at Max Fordham, who have a strong track record in the preparation of EIA.

Sarah R Smith BA (Hons), MRTPI, Aff IEMA – I am a chartered town planner with over 32 years of experience in that field. I am also an Affiliate member of IEMA. I have over 28 years of continuous experience in drafting, co-ordinating and managing Environmental Impact Assessments and Environmental Statements, including Socio Economics chapters and Cumulative Assessment chapters. This experience has covered a wide range of development projects of various sizes, for example, former industrial brownfield regeneration sites to both residential and employment uses; greenfield and green belt sites for residential/new settlements/urban extensions/business parks (from 300 dwellings to 4,500 dwellings); extension and expansion of a pharmaceutical manufacturing plant and construction of a large animal feedmill.

The Transport chapter of the ES has been prepared by Ian Dimbylow Director of RPS Transport. Ian holds a Masters Degree in Civil Engineering, Design and Management (MEng) is a Chartered Engineer through the Institution of Civil Engineers (CEng MICE). Ian is also a member of the Chartered Institution of Highways and Transportation (MCIHT). He has over 20 years of experience in the field of transportation planning and engineering, and is based in the London office of RPS from where he is responsible for managing a wide variety of transport and development planning projects across the United Kingdom, but with a particular focus upon the East and Southeast of England as well as projects within London. Ian has appeared as an expert witness to a planning Inquiries on transport planning issues and has also undertaken appeal by written representation. Ian has prepared Transport Assessments and transport chapters for Environmental Impact Assessments for a wide variety of projects from energy infrastructure, urban realm design and government buildings to large residential urban extensions. He was assisted in the preparation of the chapter by various members of the transport team within RPS.



The Climate Change chapter has been prepared by Robert Holbrook. Robert is an Energy and Sustainability Consultant and Sustainability Team Lead for Environmental Economics Ltd.. He has five years' experience in developing and reviewing ES chapters along with Energy and Sustainability Reports. He has an Environmental Science BSc and a Sustainability MSc.

1.0 INTRODUCTION

1.1.1 This Environmental Statement (ES) has been prepared by hgh consulting and forms part of a suite of documents in support of two separate planning applications by Lochailort Kentford Ltd (LKL) ('the Applicant') for the redevelopment of the former Animal Testing Research Facility, at Kentford, CB8 7UA.

1.1.2 The two separate planning application applications to which this ES relates are:

Full Application (Eastern Parcel)

"Demolition of existing buildings on site, and phased redevelopment to provide residential units alongside a retail/ commercial building (Use Class E), conversion of the existing listed stable block to community/ commercial use (Use Class F2/ E), provision of open space, play space, and associated infrastructure and car parking."

Hybrid Application (Eastern Parcel and Western Parcel)

"Hybrid application for the demolition of the existing buildings on site and the phased development of the entire site for residential, care home, retail and commercial, community and education use along with provision of open space, play space, and associated infrastructure and car parking."

Full application - Demolition of existing buildings on the eastern site, and phased redevelopment to provide residential units alongside a retail/ commercial building (Use Class E), conversion of the existing listed stable block to community/ commercial use (Use Class F2/ E), provision of open space, play space, and associated infrastructure and car parking."

Outline application – Phased redevelopment of the western site to provide residential units alongside commercial (Class E) floorspace, one form entry primary school, 90 bed care home provision of open space, play space, and associated infrastructure and car parking."

1.2 Development Scenarios

1.2.1 The Hybrid Application encompasses the Detailed / Full Application. This ES seeks to assess:

- The Full Application i.e. without the outline elements of the Hybrid Application, and
- The Hybrid Application i.e. the Full Application plus the outline elements of the Hybrid Application.

1.2.2 The Detailed/Full Application Site boundary can be seen in red on Figure 1.1 below.

Figure 1.1: Detailed Planning Application Site Boundary (Eastern Parcel)



1.2.3 The Hybrid Planning Application Boundary is shown (in red) on Figure 1.2 below.

Figure 1.2: Hybrid Planning Application Site Boundary (Eastern Parcel and Western Parcel)



1.2.4 Table 1.1 below sets out the key terms used within this ES.

Table 1.1: Key Terms Used Within the ES

Term	Definition
Applicant	Lochailort Kentford Ltd (LKL)
Full / Detailed Application	The detailed planning application
Eastern Parcel	The detailed planning application site
Hybrid Application	The detailed planning application and the outline application for the Western Parcel
Western Parcel	The outline element of the hybrid application site
Site	The Site is generally referred to as being the whole of the Hybrid Application – to avoid necessary duplication of text. Where necessary the Eastern Parcel and Western Parcel are also used.
Design Team	The architect and landscape architect

1.2.5 The Site is located within the administrative boundary of West Suffolk Council (WSC).

1.2.6 Further details of each Application are set out at Chapter 4 of this ES

1.3 Structure of the Environmental Statement

1.3.1 The ES is set out in a structured manner to allow for easier navigation

- Non-Technical Summary (NTS);
- Volume 1: (this Volume) Main text, and
- Volume 2: Appendices.

1.3.2 In this volume, the ES is split into three parts:

- Chapters 1—5 sets out the assessment requirements, the location and uses on and surrounding the Site, sets out alternatives that have been considered when formulating the Development, the Development description and sets out an approximate construction process.
- Chapters 6 – 14 considers the potential effects of the Development on the sensitive receptors within the surrounding
- These chapters have been structured in a uniform manner so that the assessment method and criteria, the baseline conditions, the predicted effects and proposed mitigation measures can be easily identified.

- Chapter 15 summarises the conclusions of the ES by setting out any residual significant effects that may arise from the construction and development.

1.4 Technical Team

- 1.4.1 The specialist consultant team that was appointed to undertake the assessments for this EIA comprised the following:

Table 1.2: Technical Team

Air Quality	Stuart Michael Associates
Drainage and Flood Risk	Cannon
Ecology	SWECO
Heritage	Montagu Evans
Landscape and Visual Impact	Bryant Landscaping Planning Ltd
Noise	Max Fordham
Socio Economics	Rapleys
Transport	RPS
Climate Change	Environmental Economics Ltd

1.5 Opportunity for Public Consultation

- 1.5.1 Should interested parties wish to make representations on the content of this ES, or the rest of the planning application, they should be made in writing to West Suffolk Council (WSC).

West Suffolk Council

West Suffolk House

Western Way

Bury St Edmunds

Suffolk, IP33 3YU

Tel. 01284 763233

planning.technical@westsuffolk.gov.uk

- 1.5.2 Hard copies of the complete ES can be purchased from hgh Consulting at a cost of £450. Electronic copies, in the form of PDFs can be requested from hgh Consulting free of charge.

2.0 EIA SCOPE AND METHODOLOGY

2.1 What is an Environmental Impact Assessment?

Legal Background

- 2.1.1 On 3 March 1997, the Council of the European Union amended Directive 85/337/EEC through Council Directive 97/11/EC, which was given legal effect in England and Wales through The Town and Country Planning (Environmental Impact Assessment) Regulations 2011, insofar as it relates to development under the Town and Country Planning Act 1990.
- 2.1.2 The 1997 amended Directive has several purposes including, the introduction of provisions to “clarify, supplement and improve the rules on the assessment procedure” and enabling developers to obtain an opinion from the competent authority on the need for EIA. The Directive also extends the range of projects to which EIA applies and requires an outline of the main alternatives considered.
- 2.1.3 On the 1st September 2008 the Town and Country Planning (Environmental Impact Assessment) (Amendment) (England) Regulations 2008 came into force to implement the requirements of the EU Directive in respect of applications for approval of reserved matters and the approval of conditions attached to planning permissions; as well as conditions attached to the grant of minerals permissions.
- 2.1.4 On 14th April 2014 the Council of the European Union adopted amendments to the EIA Directive in the form of the 2011/92/EU Directive (which consolidated the 85/337/EEC and its amendments 97/11/EC, 2003/35/EC, and COM/2009/378).
- 2.1.5 An amendment to the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 came into force on the 6th April 2015. The new Regulations are cited as the Town and Country Planning (Environmental Impact Assessment) (Amendment) Regulations 2015. The amendment concerns the thresholds at which certain types of development projects will need to be screened in order to determine whether EIA is required under the directive.
- 2.1.6 In addition to the EIA Regulations and Directive, there is a body of guidance that further informs the EIA process, including: DCLG (March 2014) Planning Practice Guidance EIA.

Case Law

- 2.1.7 The requirements of EIA have been further defined by a series of legal cases, which form an important body of guidance. Relevant cases have been considered throughout the EIA process.
- 2.1.8 EIA is a systematic and objective process through which the likely significant environmental effects of a project can be identified, assessed and, wherever possible, mitigated. The process and its outcomes are then reported in the ES to the local planning authority and its advisors, and the public. The NTS (Volume 1) is provided to allow a wider public understanding of the environmental effects of the Development.
- 2.1.9 EIA follows an iterative process that usually involves the following stages:

- Screening is the first stage of the EIA process where the relevant authority (local planning authority of the Secretary of State) decide if EIA is required.
- Once it has been agreed that EIA is required for the development, scoping is undertaken to define what should be assessed. This is done in partnership between the applicant, the local planning authority and stakeholder consultees (including the Environment Agency, Natural England and Historic England).
- With the scope of the EIA set, relevant information on the environmental baseline conditions is collected. This information is then used initially to understand the dynamics of the likely environmental effects and inform the design of the development to avoid and/or minimise potentially significant adverse environmental effects. It is also at this stage that areas of potential environmental enhancement are identified.
- Any significant adverse effects that are identified during the formal assessment stage are then reviewed against the design to consider whether alterations could be made to avoid or reduce the effect. Should the design be altered the stage is repeated.
- Where significant adverse effects cannot be avoided or reduced through alterations to the design itself, mitigation measures are considered. Monitoring may also be considered to measure the actual significance of the effect during and post-construction, and allow management of mitigation where appropriate.

2.1.10 Once the EIA is completed, the ES is submitted to the local planning authority for consideration with the planning application(s).

2.2 Screening—Is an EIA Required?

2.2.1 Development that falls within Schedule 1 of the regulations always requires EIA and is referred to as ‘Schedule 1 development’. Development listed in Schedule 2 that is located in a ‘sensitive area’ (Regulation 2(2)), or exceeds one of the relevant criteria thresholds given in Schedule 2, is referred to as ‘Schedule 2 development’. Not all ‘Schedule 2 development’ will require an EIA, only developments that are likely to have significant environmental effects due to its size, location or nature. Development that requires EIA is referred to as “EIA development”.

2.2.2 Both Planning Applications fall within Schedule 2 section 10(b) of the Regulations as ‘Urban Development Project’ in that each application can be categorised as “development includes more than 1 hectare of urban development which is not dwellinghouse development” and “the development includes more than 150 dwellings” and the “area of development exceeds 5 hectares”.

2.2.3 Given the size and nature of each Planning Application, it was considered that significant effects have the potential to arise as a result of development. As such an EIA Screening Opinion was not sought from WSC for either Planning Application and the EIA has been undertaken on a voluntary basis.

Scope of the EIA

- 2.2.4 The principle of Scoping is to determine the likely significant effects associated with the development and the scope of the technical assessments that should be included as part of the EIA.
- 2.2.5 The potential for likely significant effects can arise during both the demolition/construction and the operational stages of the development. This is considered in further detail within the below environmental technical topics.
- 2.2.6 A formal Scoping Opinion has not been sought.

2.3 Technical Topics ‘Scoped In’

- 2.3.1 The technical topics that have Scoped into the EIA are set out at Table 1.1. Each topic is a technical chapter of this ES. These are:
- Air Quality
 - Drainage and Flood Risk
 - Ecology
 - Heritage
 - Landscape and Visual Impact
 - Noise
 - Socio Economics
 - Transportation
 - Climate Change

2.4 Technical Topics ‘Scoped Out’

Accidents, Fire and Natural Disasters

- 2.4.1 Given the nature and the location of the Planning Applications, it is considered that the potential for either large volume storage or frequent passage/delivery of fuels and chemicals during either the construction phase or following completion, is considered to be low when compared to more industrial development proposals such as chemical works, storage depots, docks, or major highways.
- 2.4.2 The risk of accidents will be low and managed in accordance with Health and Safety Regulations. A Construction and Environmental Management Plan (CEMP) will be agreed following the appointment of a main contractor (secured via a planning condition).
- 2.4.3 The risk of a natural disaster event is also considered to be low give the location of the development.

- 2.4.4 There is always a potential risk that an accident, fire or natural disaster could result in a significant environmental impact, this risk can be appropriately mitigated through embedded design measures and through compliance with statutory design guidelines

Health and Safety

- 2.4.5 The potential for the development to give rise to significant effects relating to health and wellbeing will be considered within specific technical chapters; air quality, noise, transportation and socio-economics.

Use of Natural Resources

- 2.4.6 The construction of the development will not involve the use of resources which are considered to be scarce. The energy efficiency will be in line with local and national policy and building regulations requirements.

- 2.4.7 The use of natural resources will be typical for residential led mixed-use developments of this nature.

Production of Waste

- 2.4.8 The production and management of waste will be typical of developments of this nature (i.e. residential led mixed use).

- 2.4.9 Demolition is required for the majority of the existing buildings on the Detailed Application Site (Eastern Parcel) however, given the scale of each application, the quantities of waste arising during construction are unlikely to have district wide significance. Any development (including demolition) will be subject to the waste Duty of Care legislation, to which any appointed contractor would be bound by.

- 2.4.10 All development (i.e. for both planning applications) has been designed to work with the existing topography of the site conditions. No cut and fill strategy is proposed.

- 2.4.11 All operational waste (i.e. both residential and non-residential) will be collected and managed by a private company.

Pollution and Nuisances

- 2.4.12 During demolition and construction there will be emissions from diesel and petrol powered chemicals and motorised equipment (such as plant). However, no demolition of construction works (with the exception of access) immediately about the boundaries of the Application Sites. Hoarding will offer protection to nearby residents, road users and the users of Lanwades Hall.

- 2.4.13 As is typical for projects of this nature, dust and pollution will be controlled by the Environmental Protection Act.

Archaeology

- 2.4.14 A Desk Based Assessment (DBA) has been prepared for each planning application. The DBA for the Detailed Application can be found at Appendix 2.1, and the DBA for the Hybrid Application can be found at Appendix 2.2. The findings of which are summarised below.

Detailed Application (Eastern Parcel)

- 2.4.15 Evidence of activity from the Suffolk Historical Environmental Records (SHER) shows relatively sparse archaeological activity for the Prehistoric, Roman, Saxon and medieval periods Eastern Site. As such, the potential for archaeological remains being present dating to these periods is considered low.
- 2.4.16 Documentary and cartographic evidence indicate that the assessment Eastern Parcel underwent development during the post-medieval period when it was occupied by Lanwades Hall and its associated structures, and later the AHT. Consequently, the potential for post-medieval remains is considered to be moderate to high, particularly for remains associated with Lanwades Hall and Park.
- 2.4.17 The greatest existing impact to subsurface archaeological remains is from the current Animal Health Trust campus. The construction of these late post-medieval and modern buildings, as well as the internal road systems may have caused damage to below ground heritage assets. However, despite these post-medieval and modern developments, there is still considered to be a moderate to high potential for survival of archaeological deposits in areas of deep features.
- 2.4.18 If archaeological remains are present, the potential for actual preservation is considered to be high, depending on how much damage occurred during the construction of the late post-medieval and modern buildings associated with the main AHT campus.
- 2.4.19 If archaeological remains were to be encountered during the demolition or construction, the impact would be high. However, the impact to setting will be low to moderate and not considered likely to give rise to potentially significant effects.

Hybrid Application (Western Parcel)

- 2.4.20 Cartographic evidence suggests the land on which the assessment site sits, at least since the early 17th century, were fields and arable pasture, and unlike the main Animal Health Trust campus on the Eastern Parcel, has remained largely undeveloped. Consequently, the potential for post-medieval remains is considered to be low to moderate.
- 2.4.21 If archaeological remains were to be encountered during the development, the impact would be high if the proposed construction and demolition techniques used are industry standard. Foundation, service trenches, car park creation and landscaping will remove surviving subsurface remain. However, the impact to setting will be low to moderate and not considered likely to give rise to potentially significant effects.
- 2.4.22 As such it is considered appropriate to Scope Out Archaeology from further assessment with the EIA.

Ground Conditions

- 2.4.23 A Ground Investigations Technical Note (see Appendix 2.3) has been produced to cover the whole of the Hybrid Application Site (i.e. both Eastern and Western Parcels).

- 2.4.24 Inspection of historical maps indicates the western half of the site has remained undeveloped open fields until present day, with sporadic small buildings (likely stables). The Eastern Parcel of the site has been gradually developed to the current configuration of Lanwades Park. A sewage filter bed and nursery were recorded in the north-eastern corner of the site and a small quarry was recorded in the southeast from the 1920s to the 1970s.
- 2.4.25 Shallow groundwater was not encountered with the exception of a seepage of perched water within the Quaternary Deposits within a single exploratory position. Groundwater is anticipated to be present within the Chalk deposits at a depth of approximately 30m.
- 2.4.26 A preliminary risk review was undertaken by a UXO specialist concluded that there was a credible risk of encountering UXO during the ground investigation and recommended that a detailed UXO desk study be commissioned to support the construction phase.
- 2.4.27 Based on the desk study and Initial Conceptual Site Model (iCSM), no PCLs were identified within the western part of the site (existing fields), therefore this part of the site is considered suitable for development without any further investigation works or remedial action taking place.
- 2.4.28 However, the desk study identified PCLs within the eastern half of the site. In particular, the historical site uses, particularly use as an animal health facility, were considered capable of giving rise to a wide range of contaminants.
- 2.4.29 Given the number of tanks on site and the potential for localised fuel contamination, there was considered a potential risk from vapour intrusion. There is also considered a potential risk from landfill gases associated with the backfilled quarry on site.
- 2.4.30 All relevant receptors (human health, controlled waters, buildings and services and environmental) have been considered within the Ground Investigation Report (see @.x) depending on the applicable sources and contaminants outlined above, the pathways identified and the presence of an appropriate receptor.
- 2.4.31 The Tier 2 assessment reported all concentrations of contaminants are below the relevant generic assessment criteria for human health receptors with the exception of a single arsenic concentration. All other concentrations of arsenic from elsewhere on site were well below the guideline value and thus it is likely this is relatively localised.
- 2.4.32 Analysis indicates that contaminant levels do not pose an acute risk to construction workers or site users, both during construction and following completion of the development.
- 2.4.33 Investigative works have not encountered any suspected area of contamination, and no significant groundwater has been encountered. On this basis, the overall risk to controlled waters is considered to be low.
- 2.4.34 Overall, based on the laboratory data and field observations to date, no significant areas of suspected contamination have been detected. However, localised areas of contamination cannot be discounted based on the history of the site.

- 2.4.35 A detailed conceptual site model has been undertaken within the Ground Investigation Report and this identifies the key sources, pathways and receptors relevant to the site and identifies any significant pollutant linkages. The identified pollutant linkages and their overall risk classification are summarised as being from very low to moderate.
- 2.4.36 Standard demolition and construction practices should be used to reduce the risk posed to construction workers and adjacent site users from contamination during the construction phase.
- 2.4.37 It is anticipated that further intrusive investigation will be secured via a standard planning conditions with a further requirement for a remediation strategy, also to be controlled via planning conditions.
- 2.4.38 Based on the above it is considered appropriate to Scope Out Ground Conditions from further assessment with the EIA.

Wind

- 2.4.39 Near to the ground, the effects of surface roughness associated with buildings, trees or other obstructions in the built environment influences certain aspects of behaviour and properties of the wind - causing wind speeds to generally increase with height, as well as be particularly turbulent close to ground level. Consequently, impacts arising from winds in the built environment are common and increase with increasing building height.
- 2.4.40 However, given that no development will be in excess of 3 storeys, it is considered that the development does not have the potential to rise to higher wind speeds than the baseline condition.

Energy

- 2.4.41 An Energy and Sustainability Strategy has been prepared in support of the planning application, further details of which are summarised in Chapter 4 and Chapter 14 Climate Change. The Energy and Sustainability Reports can be found at Appendix 14.3 (Detailed Application) and 14.4 (Hybrid Application). Where appropriate this has informed the EIA.

Geographical Scope

- 2.4.42 The physical extent of each Application Site is shown in the redline plans contained at Appendix 2.4 (Detailed Planning Application) and Appendix 2.5 (Hybrid Planning Application). The EIA is not limited to the extent of the redline plans and it is recognised that some impact may exceed that of the Planning Application boundaries. This is explained within each technical chapter of the ES where relevant.
- 2.4.43 The geographical extent of the EIA also considers the potential implications of related and un-related development activities such as the highway improvements required for the EIA proposals.

Temporal Scope

- 2.4.44 Given the part of the Hybrid Planning Application is being made in outline, the phasing is at this stage necessarily indicative. Further information on the phasing is set out at Chapter 5.

2.4.45 The EIA will consider impacts arising from both construction and operation of the development. The development as a result of each Planning Application is considered to be permanent in nature and therefore no assessment of decommission has been undertaken.

2.4.46 Unless stated otherwise the assessment scenarios are:

- Baseline
- Future Baseline + Development
- Future Baseline + Developments + Cumulative Development

2.4.47 Further information on Cumulative Development is set out at section 2.14 of Chapter 2.

Planning Policy Context

2.4.48 Planning law requires that applications for planning permission be determined in accordance with the development plan, unless material considerations indicate otherwise.

2.4.49 The National Planning Policy Framework ('NPPF') and the National Planning Policy Guidance ('NPPG') documents are the national documents upon which all Local Plans are developed.

2.4.50 The adopted development plan for WSC comprises:

- The adopted development plan for WSC comprises:
- Core Strategy (2010) former FHDC Area;
- Site Allocations Local Plan (2019);
- Joint Development Management Policies Document (2015); and
- Policies Map.

2.4.51 Other material considerations include:

- National Planning Policy Framework (December 2023) ("NPPF");
- National Planning Practice Guidance ("NPPG");
- West Suffolk Affordable Housing SPD (November 2019);
- West Suffolk Open Space Assessment;
- National Design Guide (January 2021);
- Nationally Described Space Standards; and
- Emerging West Suffolk Local Plan.

- 2.4.52 The draft West Suffolk Local Plan was submitted to the Secretary of State for Independent examination on the 24th May 2024 and is now at examination. Due to the early stage of the examination process, it is considered that the policies in the local Plan Review carry little weight at this stage.

2.5 Community and Statutory Involvement

Community

- 2.5.1 The Applicant appointed undertake consultation with a wide range of stakeholders and community. The full detail of the consultation is set out within the Planning Statements which accompany each Planning Application. This is summarised below:
- 2.5.2 November 2022 – the Applicant met with Members of Kentford Parish Council to discuss high level proposals for each Application
- 2.5.3 February 2025 – a public consultation event was held (on the 27th February), by the Applicant on the Eastern / Western Application Site. This was advertised in the local newspaper in advance of the event. A total of 51 people attended the event which included a presentation from the Applicant and Design team, followed by questions and discussion. Further meetings have been held with the Kentford and the Moulton Parish Councils.
- 2.5.4 Feedback from consultation included:
- Need for a better connection from Moulton to Kentford and particularly Kennett train station for pedestrians and cyclists;
 - Local flooding and sewerage issues in Kentford;
 - Concerns regarding effectiveness of a 'Quiet Lane' along School Road;
 - Need for junction improvements at Boys Grave Lane/ Norwich Road/ B1560;
 - Opportunities to reduce speeds on the B1506 and make it safer;
 - Need for improvements to play equipment and pre-school in Moulton;
 - Opportunities to incorporate inclusive play equipment and open spaces;
 - Visitor parking needed for walkers visiting site and surrounding area and the 3 churches walk;
 - School impact important, noting that Moulton primary school is full;
 - Need for affordable housing for local people;
 - Important for the development to successfully coexist with Lanwades Hall business;
 - The Kentford cemetery is full and there is an opportunity to provide a memorial garden on site.

2.5.5

Statutory

- 2.5.6 A formal pre application was undertaken with WSC in respect of the development of the eastern parcel of land. the Applicant has also engaged with WSC in relation to a Prior Approval Planning Application in respect of the Eastern Parcel. Natural England and Suffolk County Highways have also been consulted in specific relation to either Planning Application.

2.6 Baseline Information

- 2.6.1 A wide range of baseline data on the environment has been obtained for the purposes of the assessment including:
- Published documentary information from a variety of sources, including historical and contemporary records;
 - Survey information, including background noise levels, ecological features, landscape character, traffic levels in the road network, community facilities, etc;
 - Aerial photography; and
 - Data provided by stakeholders, including statutory and non-statutory consultees.
- 2.6.2 A description of the site and surroundings is given in Chapter 3. More detailed baseline information considered for each topic assessment is presented in each of the relevant chapters of this ES as appropriate to describe the significant environmental effects arising from the development.

2.7 Development Details to be Assessed

- 2.7.1 In order for the significant environmental effects of each Planning Application to be identified and assessed, it is necessary to understand the Site and Location (Chapter 3), as well as to clearly identify all the components of each Planning Application (Chapter 4).

Detailed Planning Application (Eastern Parcel)

- 2.7.2 The planning application is being made in full, with details of the development being submitted for approval. The key elements of the development details are set out in Chapter 4 of this ES. The assessment has been based on the detailed drawings, elevations and landscape drawings. In order to avoid unnecessary duplication these have not been appended to this ES but they accompany the Detailed Planning Application. The assessment is also based on the Schedule of Accommodation, which also accompanies the Detailed Planning Application and is not duplicated within this ES. However, a summary of the Schedule of Accommodation can be found within Chapter 4.

Hybrid Planning Application (Eastern and Western Parcel)

- 2.7.3 This planning application is being made in part full (Eastern Parcel) and part outline (Western Parcel). The outline element of the Hybrid Planning Application is supported by a series of Parameter Plans (see Appendix 2.6). These are as follows:

- Site Boundary;
- Land Use;
- Density;
- Movement;
- Storey Heights;
- Open Space;
- Movement, and
- Illustrative Phasing

2.7.4 The purpose of the Parameter Plans is to enable reasonable assessment based on the maximum extent of development and to assess the land uses to which the planning application seeks permission for. The Parameter Plans enable flexibility for future reserved matters applications whilst setting out a reasonable level of detail required to enable a robust assessment

2.7.5 An indicative accommodation schedule has also informed the assessment, and this is set out at Chapter 4.

2.8 Impact Assessment Guidance

2.8.1 The assessments that are being presented in the ES consider the potential for significant environmental effects to affect the baseline conditions as a direct/indirect result of the development. A description of the aspects of the environment likely to be significantly affected by the development is a requirement of the EIA Regulations. The baseline conditions are defined as the existing state of the environment and how it may develop in the future in the absence of the development and with certain committed developments included.

2.8.2 Where likely significant adverse effects have been identified during the assessment, it is a requirement to set out the measures that have been proposed to prevent, reduce and where possible offset any effects. These are described in each topic chapters if required.

2.8.3 The remaining residual effects taking account of mitigation measures are stated in each of the ES topic sections and included within summary tables. In each case, significance criteria are applied to identify the extent to which mitigation measures would reduce the effect that has been assessed and the residual effect that would remain.

2.8.4 In order to forecast potential future effects, it is necessary to make predictions. To ensure that predictions are as accurate as possible, a description of the methods used to assess the effects of the Project are also required by the EIA Regulations. It is also necessary to provide an indication of any difficulties or limitations encountered by the technical consultants during the EIA process.

2.8.5 Unless specifically stated otherwise, the proposed assessments will be undertaken in accordance with best practice guidelines published by the relevant professional bodies. Each technical chapter in this statement

provides brief details of the baseline and assessment methodology that has been employed for that topic area.

- 2.8.6 Where there is no topic specific guidance available, a generic framework of assessment criteria and terminology has been developed to enable the prediction of potential effects and their subsequent presentation. The development of this generic framework has drawn upon technical team's experience of undertaking EIA. Where specific guidance is available, full details of the assessment criteria and terminology have been set out in the context of that topic.

2.9 General Assessment Framework

Receptor Sensitivity and Impact Magnitude

- 2.9.1 Receptors are those aspects of the environment which are sensitive to change in baseline conditions. The sensitivity of a particular receptor depends upon the extent to which it is susceptible to such changes.
- 2.9.2 Impact magnitude is determined by predicting the scale of any potential change in the baseline conditions. Where possible, magnitude is quantified; however, where this is not possible, a fully defined qualitative assessment is undertaken. The assessment of magnitude is carried out, taking account of any inherent design mitigation in the proposal that forms part of the development description.

Table 1.1: Receptor Sensitivity and Magnitude

Receptor		Impact	
Sensitivity to Change		Magnitude of Change	
Very High	VH	Very High	VH
High	H	High	H
Medium	M	Medium	M
Low	L	Low	L
Very Low	VL	Very Low	VL
Negligible	N	Negligible	N

2.10 Effect Significance

- 2.10.1 As shown in Table 2.2, the effect significance is determined by combining the predicted magnitude of impact with the assigned sensitivity of the receptor. Table 2.3 sets out the broad definitions of significance. The definition of the level of significance at which a significant impact arises will be provided within the topic method section of each chapter of the ES.

Table 2.2: Effect Significance

Criteria			Receptor Sensitivity				
			VH	H	M	L	VL
Impact Magnitude	Positive	VH	Substantial	Substantial	Major	Moderate	Moderate
		H	Substantial	Major	Moderate	Moderate	Minor
		M	Major	Moderate	Moderate	Minor	Minor
		L	Moderate	Moderate	Minor	Minor	Minor-Neutral
		VL	Moderate	Minor	Minor	Minor-Neutral	Minor-Neutral
	Negligible		Neutral	Neutral	Neutral	Neutral	Neutral
	Negative	VL	Moderate	Minor	Minor	Minor-Neutral	Minor-Neutral
		L	Moderate	Moderate	Minor	Minor	Minor-Neutral
		M	Major	Moderate	Moderate	Minor	Minor
		H	Substantial	Major	Moderate	Moderate	Minor
		VH	Substantial	Substantial	Major	Moderate	Moderate

Table 2.3: Definition of significance

Significance	Definition
Substantial	These effects represent key factors in the decision-making process. They are generally, but not exclusively associated with sites and features of national importance and resources/features which are unique and which, if lost, cannot be replaced or relocated.
Major	These effects are likely to be importance considerations at a regional or district scale but, if adverse, are potential concerns to the development, depending upon the relative importance attached to the issue during the decision-making process.
Moderate	These effects, if adverse, while important at a local scale, are not likely to be key decision-making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.
Minor	These effects may be raised as local issues but are unlikely to be of importance in the decision-making process. Nevertheless, they are of relevance in the detailed design of the development.

Neutral	Effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.
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2.10.2 As required by the EIA Regulations, the likely significant effects of the EIA proposals are described as:

- Adverse or beneficial;
- Direct or indirect;
- Temporary or permanent;
- Reversible or irreversible; and
- Cumulative.

2.10.3 Adverse effects are undesirable and result from negative impacts. Beneficial effects are desirable and result from positive impacts.

2.10.4 Each effect will have a source originating from the development, a pathway and a receptor. Effects which operate in this direct way are regarded as direct effects. Effects on other receptors via subsequent pathways are regarded as indirect effects.

2.11 Qualitative and Quantitative Assessments

2.11.1 The assessment will be based on the comparison of qualitative and where possible quantitative predicted impacts compared with existing baseline environmental conditions. Any significant changes expected in future baselines due to environmental trends will also be described qualitatively, or in certain cases calculated as quantitative future baseline to allow meaningful future year assessment. These future year baselines can take account of cumulative developments not yet built although in the planning system. Each technical chapter of the ES clearly sets out where the assessments are quantitative and qualitative.

2.12 Initial and residual Effects

2.12.1 As stated previously, the EIA process enables the likely significant effects of a development to be identified so that, where possible, adverse effects predicted to arise as a result of the proposal can be prevented, reduced and where possible offset through the adoption of suitable measures. Additionally, enhancement measures can be incorporated to maximise the beneficial effects of the development. The adoption of mitigation and enhancement measures results in initial and residual effects. These can be defined as:

- *Initial Effects:* Effects occurring as a result of the development prior to the adoption of any additional mitigation or enhancement measures; and
- *Residual Effects:* Effects occurring as a result of the development taking into account the adoption of identified additional mitigation or enhancement measures.

2.12.2 All of the assessments have involved a process of interaction between the EIA team and the design team with the different technical consultants commenting on the design and suggesting design changes to reduce

an adverse environmental effect or increase an environmental benefit, either during the construction or operational stages of the development.

- 2.12.3 Measures that design out significant effects that form an inherent part of the development as proposed, known as inherent effects, are considered in the initial impact. For example, many environmental constraints such as flood risk, must be designed out of a development for it to be viable and it would be impractical to consider the development without such measures in place.
- 2.12.4 Additional mitigation and enhancement are defined as a measure that is additional to the development as initially proposed, to address any outstanding residual effects.

2.13 EIA Assumptions and Limitations

- 2.13.1 The following key assumptions will be made in preparing this ES:
- All legislative requirements will be met. Therefore, any standard guidance which is provided to ensure minimum legal compliance is not considered to constitute mitigation in the EIA and will not be taken into account;
 - The assessment of effects prior to the adoption of mitigation measures will assume that the development will be constructed in accordance with industry standard techniques. Such techniques will therefore not be considered as mitigation;
 - Where further assumptions have been made for individual topic assessments these will be identified within the relevant topic chapters; and
 - Any limitations or uncertainties associated with impact prediction or the sensitivity of receptors due to the absence of data or other factors will give rise to uncertainty in the assessment. Any such limitations will be referred to in the relevant technical chapters of this ES.

2.14 Cumulative Assessment

- 2.14.1 Schedule 4 of the EIA Regulations requires that the cumulative effects of the development should be included within the ES.
- 2.14.2 The EIA Regulations does not set out a methodology for cumulative impact assessment. However, in many cases the broad methods employed for Sustainability Appraisal (SA) and Strategic Environmental Assessment (SEA) can be used. The European Commission has also produced a 'Study on the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions' (May 1999). These methodologies are generally qualitative since many of the interactions are too complex to robustly model quantitatively.
- 2.14.3 European guidance on cumulative impacts (Document EC DH XI) "Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions" (May 1999) defines cumulative impacts as "impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the Project".

2.14.4 The guidance goes on to state that:

“Activities in the past, present and future can all have a bearing on the project being assessment and will influence the time frame set for the EIA. Setting time frame “boundaries” will allow for the inclusion of past and future developments which could lead to indirect or cumulative impacts or impact interactions.....

In practical terms the extent of the assessment in terms of how far into the past and into the future will be dependent upon the availability and quality of information. Past activities can often be identified from historical maps, present activities from current maps and future development activities from development plans.....

In setting the future time boundary it is suggested that in general beyond 5 years there is too much uncertainty associated with most development proposals.....

.....it is only reasonably to consider current events and those that will take place in the foreseeable future. Furthermore, the assessment can only be based on the date that is readily available. There needs to be a cut off point at which it can be said that the impacts cannot be reasonably attributed to the project.”

2.14.5 As well as the above cumulative impacts, others will be considered on a case by case basis.

2.14.6 The cumulative impact assessment will be considered in the following categories:

- Combined Effects of Individual Impacts – For example, when air quality impact caused by increased vehicle emissions combines with a microclimate impact of reduced wind speed causing a reduction in dispersion, resulting in adverse air quality; and
- Combined Effects with Other Developments – Those that are major applications (10+ units / 1000+sqm floorspace) that were approved in the last 5 years or pending, that were considered as having the potential to give rise to cumulative impacts.

Combined Effects of Individual Impacts

2.14.7 Combined effects on individual receptors have been assessed and are set out within Chapter 15, Table 18.3. The residual impacts that have been identified by each discipline have been analysed to identify receptors that may be impacted by combined effects from, for example, air quality and noise.

2.14.8 Where a single receptor has been identified as being impacted by combined effects, this exercise has assessed the potential residual impacts on that single receptor.

Combined Effects with Other Development

2.14.9 In respect of potential cumulative effects with other developments the Planning Practice Guidance (Paragraph 24) states the following:

“Each application (or request for a screening opinion) should be considered on its own merits. There are occasions where other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a proposed development. The local planning authorities should always have regard to the possible cumulative effects arising from any existing or approved development. There could also be circumstances where two or more applications for development should be considered together. For example, where the applications in question are not directly in competition with one another, so that both or all of them might be approved, and where the overall combined environmental impact of the proposals might be greater or have different effects than the sum of their separate parts.”

- 2.14.10 Therefore, it is considered that that a robust cumulative assessment will account for any existing or approved developments (i.e. anything with planning permission) and any application which could give rise to cumulative impacts.
- 2.14.11 The development to be included with the cumulative assessment are listed in Table 2.4 below and the corresponding map show at Figure 2.1 below, also indicating their respective proximity to the Application Sites.
- 2.14.12 The scope of committed developments to be assessed within the cumulative assessment will be based on a criteria set out in each technical topic, if relevant.

Table 2.4: Summary of Cumulative Development Considered with the EIA

Map and Planning Reference	Address Site	Summary of Development	Status	Distance from Site
1 18/00752/ ESO	Land Southwest of 98 To 138 Station Road Kennett Suffolk	Known as Kennett Garden Village Sustainable 'Garden Village' extension to Kennett - residential-led development with associated employment and community uses (including care home and/or sheltered housing) and a new primary school with a pre-school (nursery) facility, supporting infrastructure and open space/landscaping.	Granted - 15 th April 2020: Under Construction	2km north of Site
2 DC/23/086 4/FUL	Land At Former St Felix School Fordham Road Newmarket Suffolk	Planning application - a. 50 dwellings, garages, associated infrastructure including substation and foul water pumping station and public open space (following demolition of existing building and hard standing) b. new vehicular access onto Fordham Road following closure of existing southbound access c. re-location of tennis courts.	Granted on Appeal – 18 th July 2024	5.3km west of Site
3 DC/13/040 8/OUT	Hatchfield Farm Fordham Road Newmarket Suffolk CB8 7XL	Outline application: Residential development of up to 400 dwellings plus associated open space (including areas of habitat enhancement), foul and surface water infrastructure, two accesses onto the A142, internal footpaths, cycle routes and estate roads. (Major Development) (Departure from the Development Plan)	Granted on Appeal – 11 th July 2014 : Under Construction	5.5km west of Site

4 EN010106 (Planning Inspectorate Scheme Reference)	Sunnica Energy Farm, Green Lane Freckenham Worlington Freckenham Suffolk	DCO for the construction, operation, maintenance and decommissioning of a generating station with a gross electrical output capacity of over 50MW, comprising ground mounted solar photovoltaic ("PV") panel arrays; one or more battery energy storage systems ("BESS") with a gross storage capacity of over 50MW; connection to the UK electricity transmission system and other associated and ancillary development.	Granted - 12 th July 2024	3.6km north of Site
5 DC/21/1621/HYB	Land Required For Bexwell To Bury St Edmunds Anglian Water Pipeline Moulton Road Gazeley Suffolk	Hybrid planning application - a. proposed 70-kilometre pipeline and associated above ground infrastructure at Gazeley, Isleham and Woodditton; b. Outline planning application - for above ground infrastructure at Bexwell, Kentford, Lady's Green and Rede with all matters reserved except for access	Approved – 18 th October 2022 : Under Construction	2.4km south of Site
6 DC/19/2347/FUL	Land East Of Russet Drive Bilberry Close And Parsley Close Manor Wood Red Lodge Suffolk	Planning Application - 141 no. dwellings and associated infrastructure including roads, parking, sustainable drainage, pumping station and public open space, as amended. Adequate access should be provided to the satisfaction of the highway's authority.	Approved – 31 st October 2023 : Under Construction	4.4km north of Site

Figure 2.1: Map of Cumulative Development Considered within the EIA



3.0 THE LOCATION AND APPLICATION SITES

3.1 The Location

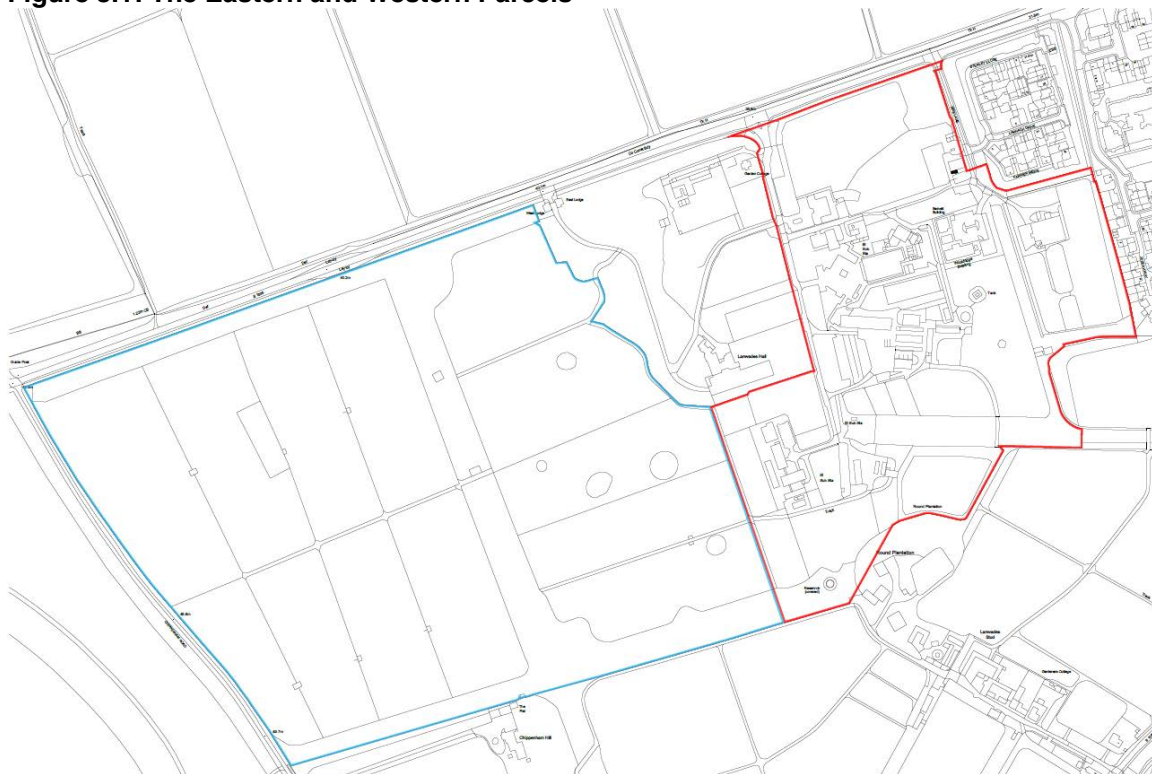
3.1.1 For the purposes of this ES, the parcels of land (the Detailed Application Site and Hybrid Application Site) which are the subject of the two separate applications, are referred to as the 'Site'. Where appropriate, the Site will also be referred to as the Eastern Parcel and Western Parcel (noting that both the Eastern and Western Parcel make up the whole of the Site).

- The Detailed Application Site (Eastern Parcel only) is 16.54ha
- The Hybrid Application Site (Eastern Parcel and Western Parcel) is 48.54ha

3.2 The Application Sites

3.2.1 The Site is a brownfield Site, located at the former Animal Heath Trust Research Centre in Kentford. The Site in its entirety (i.e. the Eastern and Western Parcel) is 48.54ha. The Site falls within the ownership of the Applicant. The Site is shown on Figure 3.1 below.

Figure 3.1: The Eastern and Western Parcels



[Note: on the above plan the red line denotes the Eastern Parcel and the blue line denotes the Western Parcel]

- 3.2.2 The Site comprises brownfield land and has historically been occupied in its entirety by the AHT, and used for the purposes and activities of the Trust, primarily for the purpose of research and development and veterinary clinical from 1946 (first founded as the Veterinary Education Trust). The Animal Health Trust ceased operating on the Site in 2020 and has subsequently lain vacant.
- 3.2.3 There are over 32 existing vacant buildings, the majority of which are located on the Eastern Parcel the Site. The uses of which included extensive laboratories and research facilities, including the Centre for Small Animal Studies, and Centre for Equine Studies, as well as the Cancer Therapy Centre, MRI and x-ray buildings, a visitors' centre, staff accommodation block, offices, a hydrotherapy unit, and associated stables, kennels, paddocks and barns.
- 3.2.4 Other buildings across the Site include ancillary structures, sheds, open kennels, and energy infrastructure. The rest of the Site comprises approximately 2.88 hectares of hardstanding. In addition to this there are 478 existing car parking spaces in areas of hardstanding across the Site.
- 3.2.5 The Site is bound by the B1506 to the north, existing residential dwellings along Jeddah Way and Farrier Mews to the east, existing paddocks to the south, and School Road to the west. The Site lies directly west of (and adjacent to) the village of Kentford.
- 3.2.6 Existing vehicular and pedestrian access points are from the B1560 with Sir Graham Kirkham Avenue and Sire Lane.
- 3.2.7 A bus stop is located to the east of the Site (approximate 9-minute walk) on Moulton Road. There are other bus routes which provide services to Bury St Edmunds, Mildenhall, Newmarket and Exning.
- 3.2.8 The Site is located approximately 1km away (2-minute car journey, 4-minute cycle journey or 10-15-minute walk) from Kennett railway station, which operates services to Cambridge every 28 minutes and Ipswich every 40 minutes. There are also bus stops to the east of the Site on Moulton Road which provide services to Bury St Edmunds, Mildenhall, Bury St Edmunds, Newmarket and Exning.
- 3.2.9 There are no Public Rights of Way (PRoWs) on the Site.

Topography, Geology and Groundwater

- 3.2.10 Based on geological mapping, the site is recorded to be underlain by the Holywell Nodular Chalk Formation and New Pit Chalk Formation (undifferentiated) to depths of around 60-70m.
- 3.2.11 Shallow groundwater was not encountered with the exception of a seepage of perched water within the Quaternary Deposits within a single exploratory position. Groundwater is anticipated to be present within the Chalk deposits at a depth of approximately 30m.
- 3.2.12 The Site is located within a Source Protection Zone II (Outer Zone) with the far south-eastern corner within a Source Protection Zone I (Inner Zone) associated with an abstraction point located within the south-eastern corner of the site. The well is recorded as abstracting from the Principal Aquifer within the Chalk Formation for commercial use/general farming/spray irrigation.

3.2.13 There are no other active groundwater abstractions within 1km of the Site

3.3 Heritage

3.3.1 The Site is not located within or adjacent to a Conservation Area.

3.3.2 The Site (Eastern Parcel) contains the Visitor's Centre (a Grade II listed building) that comprise the former stables to Lanwades Hall, itself a Grade II listed house, which is located adjacent to but outside the Site. Lanwades Hall is in separate ownership and does not form part of Site (i.e. not within either red line planning boundary).

3.3.3 There are no Scheduled Monument adjacent or within 1km of the Site

3.4 Ecological Designations

- There is a Special Protection Zone (SPA) located 2.2 km northeast of the Site, Breckland Farm, which is separated from the Site by the A14 and Kentford village. There are 2 further SPAs; Fenland SAC and Chippenham Fen Ramsar, located 4.6km northeast and 4.7km northwest of the Site, respectively.
- There are 6 National Statutory Designations including 5 Sites of Special Scientific Interest (SSSI) and 1 National Nature Reserve (NNR), as well as 5 Non-Statutory Designations located within 5km of the Site (see Chapter 8 for further details).

3.5 Other Environmental Designations

3.5.1 The Site is subject to the following environmental, physical and policy designations:

- There are 6 Grade II Listed Buildings located adjacent or within 1km of the Site.
- The Site is located within Flood Zone 1, shown on the Environment Agency (EA) Flood Map for Planning. Flood Zone 1, defined as a low risk of flooding where land is considered to have less than 0.1% annual probability of river or sea flooding in any given year.
- The Site is located within groundwater Source Protection Zone (SPZ) III – Total Catchment.

3.5.2 The Site is **not** subject to the following environmental, physical and policy designations:

- The Site is not located within an area of the Green Belt.
- The Site is not located within, or adjacent to, an Air Quality Management Area ("AQMA").
- The Site is not located within or adjacent to Ancient Woodland.
- There are no trees on Site which are subject to Tree Preservation Orders (TPOs)

4.0 THE DEVELOPMENT DESCRIPTION

4.1 The Planning Applications

Detailed Application (Eastern Parcel)

- 4.1.1 The formal description of development (i.e. for the planning application forms) is as follows:

“Demolition of existing buildings on site, and phased redevelopment to provide residential units alongside a retail/ commercial building (Use Class E), conversion of the existing listed stable block to community/ commercial use (Use Class F2/ E), provision of open space, play space, and associated infrastructure and car parking.”

Hybrid Application (Eastern and Western Parcel)

- 4.1.2 The formal description of development (i.e. for the planning application forms) is as follows:

“Hybrid application for the demolition of the existing buildings on site and the phased development of the entire site for residential, care home, retail and commercial, community and education use along with provision of open space, play space, and associated infrastructure and car parking.”

Full application - Demolition of existing buildings on the eastern site, and phased redevelopment to provide residential units alongside a retail/ commercial building (Use Class E), conversion of the existing listed stable block to community/ commercial use (Use Class F2/ E), provision of open space, play space, and associated infrastructure and car parking.

Outline application – Phased redevelopment of the western site to provide residential units alongside commercial (Class E) floorspace, one form entry primary school, 90 bed care home provision of open space, play space, and associated infrastructure and car parking.”

4.2 The Need for Development

- 4.2.1 The delivery of new homes, including affordable homes, will contribute towards the housing required by the NPPF Standard Methodology. This will help give local people the opportunity to remain in the local area as well as for people to relocate to the area. This is particularly important given the lack of housing supply.

4.3 Key Elements of Detailed Application (Eastern Parcel)

- 4.3.1 The key elements of Detailed Application are set out in Table 4.1 and described below.

Table 4.1: Components of the Detailed Application (Eastern Parcel)

Residential						
Number of Dwellings		302				
Tenure and Mix						
			Market	Affordable Home Ownership	Social Rented	Total
		1 bed	16	4	17	37
		2 bed	41	8	17	66
		3 bed	138	8	10	155
		4 bed	29	-	-	29
		5 bed	15	-	-	15
		Total	238	20	42	302
		Total %	79%	6%	14%	
Total Floorspace (GIA) sqm		30,619.5sqm Use Class C3 (Residential) 190.4sqm Ancillary				
No. of Storeys		1.5 to 2.5 storeys				
Car Parking		Residential: 567 spaces plus 79 visitor spaces				
Cycle Parking		2 secure covered spaces per dwelling, in a mixture of: <ul style="list-style-type: none">Garages (for homes with garages)Sheds (for homes without garages)Lockable stores (for maisonettes)				
Commercial						
Community Hub and Retail		Community Hub (within the retained Visitors Centre (Grade II Listed Building)), comprising: 621sqm of Use Class E/F2 381sqm of Use Class C (retail)				
Total Floorspace		1,002sqm				
Cycle Parking		Secure visitor and staff parking will be provided				
Car Parking		Retail: 8 spaces Community Hub: 12 spaces				

Electric Charge Vehicle Points

ECVPs will be provided within each Plot (A to E) with a total of 236 private charging points and 66 communal points

Demolition

- 4.3.2 With the exception of the John MacDougall Visitors Centre (Grade II Listed) (on the Eastern Parcel) all existing buildings will be demolished. The Grade II Visitors Centre will be refurbished and used as the Community Hub / Retail Use.

Energy and Sustainability

- 4.3.3 The development includes the following technologies:
- Air Source Heat Pumps (ASHPs)
 - Photovoltaic (PV) Panels on all dwelling house roofs.
 - Decentralised Mechanical Extract Ventilation (dMEV)
 - The use of smart meters will provide future occupiers with real time data to allow for management of energy consumptions.
 - Electric Charging Vehicles Points (EVCPs) will be provided at each Parcel.
- 4.3.4 Further details are set out within the Climate Change Chapter 14 of this ES

4.4 Waste

- 4.4.1 Residential (i.e. household) refuse and recycling will be stored in rear gardens of houses and within communal gardens of flats. Non-residential buildings will be provided with specific bin areas. All operational waste (i.e. both residential and non residential) will be collected and managed by a private company. It is anticipated that an Operational Site Waste Management Plan will be secured via planning conditions.

Landscaping and Open Space

- 4.4.2 A Landscape Strategy has been drawn up to manage the landscape assets of the Site and to ensure that the proposals integrate a well-designed landscape scheme which works with and enhances not only the setting, but also the experience of those living there in years to come. It is submitted as a stand-alone document in support of the Detailed Planning Application.
- 4.4.3 The aim of the landscape is to ensure that the green character of the area is retained, promoting a healthy natural environment within a semi-rural context.
- 4.4.4 The landscaping (Eastern Parcel) will provide a total of 7.4ha of public open space provision, including:
- Natural and Semi-natural Greenspace – 3.1ha

- Amenity Greenspace – 1.4ha
- Parks & Gardens – 1.2 ha
- 1 Neighbourhood Equipment Areas for Play (NEAP) with 1 Multi Use Games Area (MUGA) - 0.2 ha
- 2 Local Equipped Area for Play (LEAP) – 0.2ha
- Pocket Green: 0.3ha

4.4.5 The above is in excess of the WSC Policy requirements.

4.4.6 The detailed Lighting Strategy (which can be controlled via a planning condition) will implement recommendations by the ecologist to ensure that key bat habitats at the Site, in particular the woodland belts, do not experience excessive lux levels. Further information is set out at Chapter 8.

Biodiversity Net Gain

4.4.7 Biodiversity will be enhanced with a minimum net gain of 10% Biodiversity Net Gain (BNG) being achieved by a mixture of on and off site measures.

Access

Pedestrian and Cycle

4.4.8 The development will have multiple pedestrian and cycle connection points into the surrounding network. Pedestrian and cycle access can be taken from the two existing vehicle access points at Sir Graham Kirkham Avenue and Sire Lane.

4.4.9 As part of the off-site improvements, a shared cycleway will be constructed along the southern edge of the B1506. Further, a pedestrian/cycle access point will be available at the east of the Site. The pedestrian/cycle link will route eastwards out of the site via Sire Lane and Jeddah Way allowing a direct connection to the B1085, and Kentford Post Office.

4.4.10 The improvement works will permit a connection from the Sites' access points to the Bell junction, enabling a connection to Kennett Railway Station (north), Kennett Post Office (south) and on to Kentford.

Public Transport

4.4.11 Kennett Railway Station located within walking distance of the proposed site, offering connections to various destinations, including Newmarket, Bury St. Edmunds, and Cambridge. This station will facilitate transport for both commuters and leisure travellers. Access to the station from the site is available via a footway along Herringswell Road and Bury Road.

4.4.12 As part of the development proposals, the developer is expected to contribute through a s106 agreement to enhance existing bus services, resulting in a more frequent services to Newmarket and Bury St Edmunds.

- 4.4.13 To improve bus connectivity for the entire site, new eastbound and westbound bus stops are proposed for the B1506. The bus stops are proposed to be located to the east of Sir Graham Kirkham Avenue. This will provide all dwellings access to a bus stop within c.400m of their dwelling.
- 4.4.14 A pedestrian crossing will be installed along the B1506 to ensure safe access to the proposed bus stop on the northern side of the B1506.

Vehicular

- 4.4.15 Vehicular access to the Site will be taken from the north. The Site will utilise the two existing access points. This encompasses Sir Graham Kirkham Avenue, and Sire Lane.
- 4.4.16 It is proposed that 96 units will be served by Sire Lane, while Sir Graham Kirkham Avenue will serve 206 dwellings, the proposed shop, and community building / hub.

Bridleways

- 4.4.17 A network of bridleways are proposed to run throughout the Site. This consist of a primary route connecting a network of secondary routes. The primary route will run from the B1506, north of the site, to the B1506, east of the site, via Jeddah Way. Secondary routes, connected to the primary route, will also provide bridleway connections to School Road and to the B1506, via a bridleway access located east of Sir Graham Kirkham Way.

4.5 Key Elements of Hybrid Application (Eastern Parcel and Western Parcel)

- 4.5.1 The key elements of Detailed Application are set out in Table 4.2 and described below. To avoid unnecessary duplication of information all of the key elements of the Detailed Application apply to the Hybrid Application.

Table 4.2: Components of the Hybrid Application (Eastern Parcel and Western Parcel)

Residential					
Number of Dwelling (Use Class C3)	860				
Tenure and Mix		Market	Affordable Home Ownership	Social Rented	Total
	1 bed	15	11	28	55
	2 bed	41	45	59	145
	3 bed	419	38	78	535
	4 bed	73	-	28	101
	5 bed	24	-	-	24
	Total	573	94	193	860
	Total %	67%	11%	22%	-
Total Floorspace (GIA) sqm	88,864.7sqm 190.4sqm				
No. of Storeys	2 to 2.5 storeys				
Care Home (Use Class C2)	Up to 90 bed				
Car Parking	Will be provided in line with the prescribed standard at the time of the Reserved Matters Application, in summary: 2 secure covered spaces per dwelling, in a mixture of: <ul style="list-style-type: none">Garages (for homes with garages)Sheds (for homes without garages)Lockable stores (for maisonettes)				
Cycle Parking	2 secure covered spaces per dwelling, in a mixture of: <ul style="list-style-type: none">Garages (for homes with garages)Sheds (for homes without garages)Lockable stores (for maisonettes)				
Non Residential					
Community Hub and Retail	Community Hub (within the retained Visitors Centre (Grade II Listed Building)), comprising: 621sqm of Use Class E/F2 381sqm of Use Class C (retail)				
Employment Hub (Use Class E)	850sqm 2 storeys				
Education (Use Class F1)	1 Form entry primary school for up to 210 pupils Up to 900sqm				

	1 to 2 storeys
Memorial Garden (Cemetery)	Land for approximately 98 plots Up to 10 (informal) car parking spaces
Cycle Parking	Will be provided in line with the prescribed standard at the time of the Reserved Matters Application.
Car Parking	Will be provided in line with the prescribed standard at the time of the Reserved Matters Application.

Access (Western Parcel)

- 4.5.2 In addition to the access measures set out for the Detailed Application (Eastern Parcel), pedestrian and cycle access can be taken from two proposed vehicle access points, with one located in the northwest corner of the site and one east of this, both connecting to the B1506. These access points will permit cycle and pedestrian access to the offsite improvement works taking place along the southern footway of the B1506. The improvement works will permit a connection from the sites' access points to the Bell junction, permitting a connection to Kennett Railway Station (north), Kennett Post Office (south) and on to Kentford.
- 4.5.3 Pedestrian access to the proposed memorial garden will be taken from within the site, to the east of the memorial garden. Further, a pedestrian/cycle access points will be available from the southwestern corner of the Site. The proposals include a shared link across the site running from the southwest corner to the northern border, this will be tree-lined and encourage active travel through the site. The access point will provide access to School Road and will provide a connection to Moulton.
- 4.5.4 To encourage active travel through and to/from the site, proposals include the provision of a footway along School Road. The footway would permit a pedestrian connection to the village of Moulton, including to Moulton CEVC Primary School. For residents of Moulton, the footway will allow pedestrian access to the facilities proposed on site as well as onward routes through the site to village facilities and Kennett station.

Landscaping and Open Space

- 4.5.5 A separate Landscape Strategy is submitted as a stand-alone document in support of the Hybrid Planning Application.
- 4.5.6 The landscaping (Eastern and Western Parcel) will provide a total of 22.44ha of public open space provision, including:
- Natural and Semi-natural Greenspace – 10ha
 - Amenity Greenspace – 4.0ha
 - Parks & Gardens - 5ha
 - 2 Neighbourhood Equipment Areas for Play (NEAP) with 2 Multi Use Games Area (MUGA) – 1ha

- 5 Local Equipped Area for Play (LEAP) - 1ha
- Pocket Green: 1.44ha

4.5.7 The above is in excess of the WSC Policy requirements.

Biodiversity Net Gain

4.5.8 Biodiversity will be enhanced with a minimum net gain of 10% Biodiversity Net Gain (BNG) being achieved by a mixture of on and off site measures.

Lighting

4.5.9 Appropriate lighting will be provided in public and semi-public areas.

4.5.10 The Landscape Strategy (which accompanies each Planning Application, contains a plan which identify areas which are to be maintained as 'dark corridors'. These areas will not be light by artificial light. These areas of dark corridors will be the majority of the Site boundaries and the woodland belts within the Site.

4.5.11 The detailed Lighting Strategy (which can be controlled via a planning condition) will implement recommendations by the ecologist to ensure that key bat habitats at the Site, in particular the woodland belts, do not experience excessive lux levels. Further information is set out at Chapter 8.

Memorial Garden

4.5.12 In the north-west corner of the Site (Western Parcel) will be a Memorial Garden which will accommodate up to 98 cemetery plots, informal parking area, attenuation area (wetland grass which will be periodically dry) and informally landscaped gardens

Energy and Sustainability

4.5.13 The development includes the following technologies:

- Air Source Heat Pumps (ASHPs)
- Photovoltaic (PV) Panels on all dwelling house roofs.
- Decentralised Mechanical Extract Ventilation (dMEV)
- The use of smart meters will provide future occupiers with real time data to allow for management of energy consumptions.
- Electric Charging Vehicles Points (EVCPs) will be provided at each Parcel.

Operational Waste

4.5.14 Residential (i.e. household) refuse and recycling will be stored in rear gardens of houses and within communal gardens of flats. Non-residential buildings will be provided with specific bin areas. All operational waste (i.e. both residential and non residential) will be collected and managed by a private

company. It is anticipated that Operational Site Waste Management Plan will be secured via planning conditions.

4.6 Alternative Locations and Options

- 4.6.1 Alternative development options within EIA are often considered primarily in terms of location, however, given that both Application Sites fall entirely within the ownership of the Applicant it is not considered appropriate to consider alternative locations to deliver the development. The Applicant does not wish to seek alternative locations for the development and it is not considered necessary to assess the alternative locations as part of the EIA

Do nothing

- 4.6.2 Should neither application come be brought forward each Application is likely to remain in their current state and no contribution to local housing will be met.

Alternative Layouts

Detailed Application Site (Eastern Parcel)

- 4.6.3 A number of Prior Approval Planning Applications have been made in relation to the Eastern Parcel (ref. PP-13307037, to change the use of some of the existing buildings from Use Class E (commercial, business and service) to Use Class E (residential), which if approved would see the delivery of 98 new dwelling houses on the Eastern Parcel. This application is currently pending consideration from WSC. The applications are not accompanied by and Environmental Statement.

- 4.6.4 This would see the reuse of existing buildings on the Site for the delivery up to 89 new dwellings.

Hybrid Application (Eastern Parcel and Western Parcel)

- 4.6.5 The design process was an iterative process which had the benefit of the appointment of a technical team at the outset which informed the Design Team. The design evolution is set out in the Design and Assessment Statement which is submitted in support of the Hybrid Planning Application as a stand-alone document.

- 4.6.6 The design evolution was largely informed by a number of constraints, namely:

- The retention of the Listed John MacDougall Visitors Centre (Grade II Listed) and the listed building setting;
- The existing mature woodland;
- The Existing T junction, B1506 and Sir Grahame Kirkland Avenue – which is to be retained,
- The retention of Category A and Category B trees were feasible, and
- The Existing access off Sire Lane – which is to be retained.

- 4.6.7 Should the development not come forward the brownfield land would remain underutilised. The much needed housing would not be provided nor would and community facilities, in the form of a Care Home; Primary School, Employment space and a Community Hub with a retail provision, benefit the local population.
- 4.6.8 The design has also evolved as a result of consultation. In response to consultation with Moulton Parish Council and Kentford Parish Council. The design evolved to include:
- More opportunities to incorporate inclusive play equipment and open spaces, and
 - A Memorial Garden (responding to the understanding that Kentford cemetery is full), and the parameter plans now allow for an area in the north west corner of the Western Parcel for cemetery.
 - In addition, following consultation with the British Horse Society (BHS) bridleways have been incorporated within the Application.
- 4.6.9 No significant changes were made to the Parameter plans or general layout which required further testing within the EIA.

5.0 PHASING, CONSTRUCTION, AND IMPLEMENTATION

5.1 Overview

- 5.1.1 Construction methods are influenced by a combination of factors. These include the existing ground conditions and the preferred methods of the building contractor that will be appointed as the Principal Contractor. As such the information is necessarily broad at this stage and it will be subject to mediation during the detailed construction planning and following the appointment of a Principal Contractor.
- 5.1.2 The information contained within this Chapter relates to both the Detailed Application (Eastern Parcel and the Hybrid Application (Eastern and Western Parcel)

5.2 Site Preparation Works

Demolition

- 5.2.1 With the exception of the John MacDougall Visitors Centre (Grade II Listed) (on the Eastern Parcel) all existing buildings will be demolished. A Demolition Plan for the Eastern Parcel can be found at Appendix 5.1.
- 5.2.2 In addition to the above, a small barn that falls within the Western Parcel of the Hybrid Planning Application will be demolished. A Demolition Plan for the Hybrid Planning Application can be found at Appendix 5.2 (the barn is referenced as building no.32, located in the centre of the Western Parcel).

Earthworks

- 5.2.3 There will be minimal (if any) cut and fill works. Any materials that are excavated will be stockpiled on-site where they will appropriately graded and separated. Excavated materials that meet the engineering specification will be separated for re-use. It is not anticipated that any excavation materials will require disposal off-site.

5.3 Programme of Works

- 5.3.1 Until such a time as a Principal Contractor is appointed, the programme of works is necessarily indicative and high level. However, under the current programme, construction and associated activities are anticipated to be as set out at Table 5.1 below.

Table 5.1: Indicative Construction Phases

Milestone	Development Parcel	Commencement	No. of Homes	Completion
Phase 1				
	Site set up and demolition	Spring 2026	-	Summer 2026
	Parcel A	Summer 2026	26	Spring 2027
	Plot B	Spring 2026	64	Spring 2027
	Plot C	Spring 2027	167	Spring 2028
	Community Hub/Retail	Summer 2027		Spring 2027
	Education (Primary School)	Subject to Reserved Matters for the Outline element of the Hybrid App. Spring 2027		Summer 2029
Phase 2				
	Parcel D	Spring 2028	17	Autumn 2028
	Parcel E	Spring 2028	28	Summer 2029
Phase 3				
	Parcel F1	Summer 2027	59	Spring 2028
	Parcel F2	Autumn 2027	59	Autumn 2028
	Parcel G1	Winter 2028	42	Summer 2028
	Parcel G2	Spring 2028	35	Spring 2029
	Employment Site	Spring 2028		Summer 2029
Phase 4				
	Parcel H1	Summer 2028	66	Summer 2029
	Parcel H2	Winter 2028	52	Summer 2029
	Parcel J1	Spring 2029	70	Spring 2030
	Parcel J2			
	Parcel L	Summer 2030	19	Summer 2031

Milestone	Development Parcel	Commencement	No. of Homes	Completion
	Memorial Garden			
Phase 5				
	Parcel J2	Spring 2029	11	Spring 2030
	Parcel J3	Summer 2029	29	Summer 2030
	Parcel K1	Spring 2030	94	Spring 2031
	Parcel K2	Summer 2030	20	Summer 2031
Care Home		Spring 2028	90 bed	Summer 2030
Practical Completion				Summer 2031

5.4 Construction

5.4.1 The construction activities would generally entail the following broad phases of activities:

- Pre-construction works;
- Mobilisation works;
- Construction site establishments;
- Earthworks;
- Foundation works;
- Construction of structures;
- External envelope;
- Internal fit out; and
- Landscaping.

Hours and Method and Working

5.4.2 Construction and demolition works will be undertaken during the Council's standard working hours. These working hours have been used to inform the above construction and phasing programme.

5.4.3 The Council's standard working hours are Monday to Friday from 08.00 to 18.00; Saturday from 08.00 to 13.00. Work shall not be undertaken on Sunday or Bank/Public holidays unless otherwise agreed with the authority. The working hours will be subject to a standard planning condition.

- 5.4.4 In order to maintain the standard working hours, the contractor(s) may require a period of up to half an hour before and up to one hour after normal working hours for start-up and close down of activities.
- 5.4.5 The above working hours do not include operation of plant or machinery giving rise to noise with the potential to disturb nearby residents or the arrival of any HGV at site before 07:30 hrs (75 dB for residential / commercial premises and 65 dB for schools and hospitals).
- 5.4.6 There will be 100% on site crushing of demolished brickwork and concrete. While it is not possible to identify at this time the precise location of these activities on site they would be located and shielded so as to minimise noise levels at surrounding properties. The crushing activities would be subject to quick dust suppression through the use of water sprays. By crushing material on site, it is available to be used as bulk fill as required and also to minimise the number of lorry movements required to remove excess material from the site.

5.5 Typical Plant and Equipment

- 5.5.1 Consideration has been given to the types of plant and equipment that are likely to be used during the construction works. An indication of the typical types of plant and equipment associated with each key element of the works are set out below.

- Bituminous mixing and laying plant;
- Breakers;
- Bulldozers;
- Cabins for construction and containers;
- Compressing Air Plant and tools;
- Concrete Plant;
- Skips;
- Hoists;
- Diesel generators;
- Dumpers (various sizes);
- Earth Moving Plant;
- Excavators;
- Forklift Trucks and lifting Devices;
- Handheld tools;
- Loaders;
- Lorries (Deliveries and Muck Away);

- Mobile Elevating Work Platforms;
- Mast climbers;
- Pallet Jack;
- Piling Equipment;
- Power Float;
- Pumps and Dewatering Equipment;
- Road Sweeper;
- Rollers;
- Scaffolding; and
- Wheel washing and hose down facilities

Hoarding/Fencing

5.5.2 The contractor will provide site security measures around the site, through the provision of hoarding/fencing. Details of the types and height of hoarding/fencing have yet to be developed. However, it will be confirmed with the contractor prior commencement, to ensure minimal environmental impact in providing the required control measures to mitigate anticipated security and health and safety risks.

5.5.3 Currently it is anticipated that hoarding at any sensitive boundaries will be at the industry standard height of 2.4m.

5.6 Construction

Source of traffic

5.6.1 Construction traffic movements considers the following sources of traffic:

- Workforce movements to and from the Site;
- Deliveries made to the Site;
- Removal/ import of material from the Site; and
- Trips made by associated trades.

Construction Traffic Management Plan (CTMP)

5.6.2 It is expected that any planning permission will include a condition that would require a Construction Traffic Management Plan (CTMP) to be agreed with WSC and that the CTMP will define a number of measures that would be implemented to manage construction related road traffic. In this respect, any effects can be suitably managed. The CTMP will be secured by a suitably worded planning condition.

Site Access and Egress and Traffic Routing

- 5.6.3 Site access will be taken from the existing access Sire Lane and Sir Graham Kirkham Avenue

Temporary Road Closures

- 5.6.4 It is not currently anticipated that there would need to be any temporary road closures within the local area surrounding the Site as a result of the construction works. However, this will be reviewed with the contractor in planning the works, to ensure that environmental impact from any required temporary road closures (e.g. for deliveries of abnormal loads) are kept to a minimum.

Temporary Closure to Public Access

- 5.6.5 The Site is not open for public access and there are no Public Rights of Way (PRoWs) or Bridleways that are within the Site.

Peak Traffic during Construction Phases

- 5.6.6 The peak traffic during the construction phase is anticipated to be as follows:

- Demolition: 4 LGV and 28 HGVs per day, and
- Construction: 160 LGVs and 56 HGVs per day.

5.7 Code of Construction Practice

- 5.7.1 The Principal Contractor is expected to register development with the Considerate Constructors Scheme which is a national initiative set up by the construction industry to improve the image of construction. Once registered the Principal Contractor and suppliers agree to Code of Considerate Practice which is designed to encourage best practice beyond statutory requirements.

- Constructors should give utmost consideration to their impact on neighbours and the public;
- Informing, respecting and showing courtesy to those affected by the work;
- Minimising the impact of deliveries, parking and work on the public highway;
- Contributing to and supporting the local community and economy; and
- Working to create a positive and enduring impression, and promoting the Code.

- 5.7.2 A Construction and Environmental Management Plan (CEMP) will be produced (secured via a planning condition) and will clearly identify how the Principal Contractor will engage with the local community and this should be tailored to local circumstances. Contractors should also confirm how they will manage any local concerns and complaints and provide an agreed Service Level Agreement for responding to issues.

- 5.7.3 Contractors should ensure that courtesy boards are provided and information shared with the local community relating to the timing of operations and contact details for the site in the event of any difficulties. This does not offer any relief to obligation under existing Legislation

5.8 Construction and Environmental Management Plan

- 5.8.1 Details of measures to protect the environment during the construction will be set out in a Construction Environmental Management Plan (CEMP). Such measures will address hours of working, noise, vibration, dust, light spill, wheel washing and control of run-off. It is anticipated that the implementation of the CEMP will be a condition on the planning permission, and it will be regularly monitored.
- 5.8.2 The CEMP would be held on-site and could be viewed by all interested parties with contact names, details, lines of communication, and mitigation action plans. All site personnel would be made aware of its existence and undertake to adhere to the guidance.
- 5.8.3 The main contractor would be required to nominate a representative to act as a contact point with the Council, to ensure that any construction issues that may arise are dealt with effectively and promptly. Sub-contractors would also nominate or appoint a suitable team member responsible for liaison with the lead contractor's representative and to ensure that sub-contractor construction activities are managed effectively.

5.9 Construction Site Waste Management Plan

- 5.9.1 A Site Waste Management Plan (SWMP) will be produced in support of each Planning Application and will be secured via standard planning conditions. The SWMP will detail how site waste will be minimised and handled in an environmentally sustainable manner. It is anticipated that the SWMP will become a 'live' document which will be updated throughout the detailed design and construction process.
- 5.9.2 Construction waste will be generated during all stages of the construction programme. This waste will be carefully managed to prevent nuisances such as litter, dust, odour and pests, and to maintain a 'clean' working and site environment. The construction materials, site waste and spoil/arising will be transported to and from the site by road.
- 5.9.3 It is estimated that total volume of waste arising from demolition works (Eastern and Western Parcels) will be 8,000cbm.
- 5.9.4 It is estimated that the total volume of waste arising from construction works (Eastern and Western Parcels) will be 2,000cbm.
- 5.9.5 All development (including demolition) will be subject to the waste Duty of Care legislation, to which any Principal Contactor will be bound by.

6.0 AIR QUALITY

6.1 Introduction

- 6.1.1 This Chapter reports the assessment of the likely significant environmental effects with respect to Air Quality. It describes the methods used to assess the effects; the baseline conditions currently existing at the Application Sites and surrounding area; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.
- 6.1.2 The assessment considers current legislation, policy and technical guidance as well as local air quality as published by West Suffolk Council as part of their annual status reporting.
- 6.1.3 This Chapter should be read together with Chapters 1 to 5 in this ES.

6.2 Appendices

Table 6.1: Appendices for Chapter 6

Appendix No.	Document
6.1	Air Quality Report

6.3 Legislation, Policy and Guidance

Legislative Framework

National Air Quality Strategy

- 6.3.1 In 1997 the United Kingdom National Air Quality Strategy (NAQS)¹ was published. The document sets out an analysis of the magnitude and potential health and environmental problems associated with, amongst other things, air pollutant emissions resulting from road traffic.
- 6.3.2 It proposed a schedule of air quality objectives which were to be met in the years up to 2005. In setting these objectives, health and socio-economic cost-benefit factors were considered, together with consideration of the practical and pragmatic aspects of whether targets would be achievable. Whilst it was identified in the NAQS that the objectives for benzene, 1,3-butadiene, lead (Pb) and carbon monoxide (CO) could be achieved as a result of improvement measures already put in place, complying with targets for NO₂ and PM₁₀ would be more difficult.

¹ United Kingdom National Air Quality Strategy (NAQS) (1997)

- 6.3.3 Considering the additional measures that would have to be introduced to counter these apparent shortfalls, the Government voiced the following thought:

“Changes in planning and transport policies (are needed) which would reduce the need to travel and reliance on the car”.

- 6.3.4 With regard to the necessity for encouraging a shift away from private car usage, the Strategy commented, in terms of the new package approach to transport funding:

“As a general rule, traffic demand management and restraint measures should be included and this, together with proposals to promote and enhance other modes of transport, should aim to achieve modal shifts away from the private car.”

- 6.3.5 The Environment Act 1995² sections 82-84 requires that Local Authorities shall carry out reviews of air quality within their administrative areas and, where it is assessed that the air quality objectives may not be complied with in the future, an Air Quality Management Area (AQMA) must be declared. The Local Authority must then formulate an Action Plan, setting out the measures that will be employed to achieve compliance with the objectives.

- 6.3.6 A review of the UK Air Quality Strategy was undertaken in 1998 and a consultation document was published in January 1999 which outlined proposals for amending the Strategy. In August 1999, in response to the consultation, the Government then published a draft Air Quality Strategy for England, Scotland, Wales and Northern Ireland. The Air Quality Regulations (England) 2000 were enacted in April 2000, and the Air Quality (England) (Amendment) Regulations 2002³ gives legal force to the air quality standards set out in the Strategy. A new strategy was released in July 2007 with various amendments to the air quality objectives. The proposals, in brief, consisted of recommendations to adopt the provisions of the EU Air Quality Daughter Directives⁴.

- 6.3.7 Given the significant influence that motor vehicle exhausts exert on air quality in the UK and the apparent links between elevated levels of certain air pollutants and premature mortality, it is clear that current and emerging Government policy is geared towards several essential objectives, which are:

- continued action to reduce pollutant emissions from vehicles across the EU, which can be exemplified by the plethora of Directives concerning limitation of motor vehicle emissions since the 1970's and specific targeted initiatives such as the Auto-Oil Study programme;

² Environment Act 1995

³ Air Quality (England) (Amendment) Regulations 2002

⁴ EU Air Quality Daughter Directives

- concerted action at a National level to reduce private car trips in urban and inter-urban uses and encourage use of alternative forms of transportation;
- action at a local level to manage transportation and air quality in order to reduce the number of car trips in urban areas specifically and to aim for compliance with the NAQS by the appointed dates; and
- to ensure that Local Authorities in the execution of their development control responsibilities take account of the consequent air quality impacts.

6.3.8 It is evident that continued growth in private car ownership and usage will result in further deterioration of air quality in urban areas and increasing emissions of greenhouse gases. Whilst current technological improvements will extend the reduction in emissions, additional measures will be required in order to prevent re-growth of emissions, both to meet ambient air quality targets in urban areas and to offer an alternative to the car for urban journeys. Consequently, where new development can be located in relatively close proximity to public transport and local services, a contribution to the UK's target of reducing emissions will have been made.

6.3.9 Levels of lead (Pb) and sulphur dioxide (SO₂) are also controlled by the National Air Quality Objective (NAQO). Lead (Pb) levels have reduced significantly since its reduced use as a fuel additive, and the abolition of four-star petrol in January 2000 means that the amount of Pb in petrol is reduced to a negligible level. SO₂ is predominantly associated with emissions from industrial processes and when assessing the effects of traffic, neither SO₂ nor Pb need be assessed.

The Environment Act 2021

6.3.10 The Environment Act was passed into UK law in November 2021⁵ with the aim of protecting and enhancing the environment for future generations. The Act establishes the Office for Environmental Protection (OEP), the new green watchdog for England (and Northern Ireland), which will be responsible for 'holding to account' government and public bodies on their environmental obligations.

6.3.11 Amongst other things, the Act introduced a duty on the government to bring forward at least two air quality targets by October 2022, which were set in secondary legislation. The first aim was to reduce the annual average level of fine particulate matter (PM_{2.5}) in ambient air. The second was a long-term target (set a minimum of 15 years in the future).

⁵ Environment Act 2021

- 6.3.12 The Environment Improvement Plan 2023⁶ (First revision of the 25 Year Environment Plan) reiterated the ambition to reduce PM_{2.5} concentrations in the future. The Plan sets the following long-term and interim targets.

Long-term targets;

“By the end of 2040, we will achieve a maximum Annual Mean Concentration Target (AMCT) of 10 micrograms of PM_{2.5} or below per cubic metre (µgm⁻³); and

By the end of 2040, we will reduce population exposure to PM_{2.5} by 35% compared to 2018 levels”.

Interim targets:

“By the end of January 2028:

The highest annual mean concentration in the most recent full calendar year must not exceed 12 µgm⁻³ of PM_{2.5}.

Compared to 2018, the reduction in population exposure to PM_{2.5} in the most recent full calendar year must be 22% or greater”.

Planning Policy

National Planning Policy

- 6.3.13 The revised National Planning Policy Framework (‘NPPF’)⁷ summarises in a single document, the Government’s planning policies for England and how these are expected to be applied. The NPPF was updated in December 2024, superseding the previous versions.
- 6.3.14 The NPPF introduces the presumption in favour of sustainable development at the heart of the framework, where Section 2, Paragraph 11 states that local planning authorities should apply this presumption in favour of sustainable development when creating plans and assessing and determining development proposals.

⁶ The Environment Improvement Plan 2023 (First revision of the 25 Year Environment Plan) – February 2023

⁷ Ministry of Housing, Communities and Local Government (MCHLG) (2024) National Planning Policy Framework (NPPF). Conserving and enhancing the historic environment. Ministry of Housing, Communities & Local Government. Available online at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf

6.3.15 Policies and objectives which are of particular relevance to Air Quality include:

“Paragraph 199.

Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.

Paragraph 200.

Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed.

Paragraph 201.

The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.”.

Local Planning Policy

6.3.16 Current Policy for West Suffolk Council is presented in the adopted West Suffolk Local Plan⁸ (consisting of the former Forest Heath District Council (FHDC) and St Edmundsbury Borough Council (SEBC) areas) –

⁸ West Suffolk Local Plan available online at: https://www.westsuffolk.gov.uk/planning/Planning_Policies/local_plans/west-suffolk-local-plan-former-forest-heath-and-st-edmundsbury-areas.cfm

Core Strategy (2010) former FHDC area, Core Strategy (2010) former SEBC area, Forest Heath area of West Suffolk Council Site Allocations Local Plan (SALP) and SEBC Vision 2031 (2014).

- 6.3.17 The current Local Plan is to be replaced and future Policy is covered in the emerging West Suffolk Local Plan⁹ which is out for public consultation.
- 6.3.18 There are two Policies in the current Local Plan for West Suffolk (CS2 Sustainable Development Policy DM14 Protecting and Enhancing Natural Resources, Minimising Pollution and Safeguarding from Hazards) and three Policies in the emerging Local Plan (SO16 Environment, LP8 Protecting and enhancing natural resources, minimising pollution and safeguarding from hazards and SPX Development affecting the horse racing industry) which specifically cover air pollution, and extracts are produced below.

Policy CS2 Sustainable Development

“A high quality, sustainable environment will be achieved by designing and incorporating measures appropriate to the nature and scale of development, including:

The protection and enhancement of natural resources:

- A) making the most resource efficient use of land and infrastructure;*
- B) protecting and enhancing biodiversity, wildlife and geodiversity, and avoiding impact on areas of nature conservation interest in both rural and built up areas;*
- C) identifying, protecting and conserving: a network of designated sites including the Breckland Special Protection Area (SPA)* and other sites of national and local importance; Biodiversity Action Plan (BAP) habitat and species; wildlife or green corridors, ecological networks; and other green spaces will be identified, protected and habitats created as appropriate;*
- D) conserving and, wherever possible, enhancing the character and quality of local landscapes and the wider countryside and public access to them, in a way that recognises and protects the fragility of these resources;*
- E) conserving and, wherever possible, enhancing other natural resources including, air quality and the quality and local distinctiveness of soils;*
- F) protecting the quality and availability of water resources;*

⁹ emerging West Suffolk Local Plan available online at: https://www.westsuffolk.gov.uk/planning/Planning_Policies/local_plans/ws-local-plan-review.cfm

G) *maximising the efficient use of water including recycling of used water and rain water harvesting;*

H) *maximising the potential of existing and new sources of energy from biomass including timber and other energy crops; and*

Sustainable design of the built environment:

I) *providing the infrastructure and services necessary to serve the development;*

J) *incorporating the principles of sustainable design and construction in accordance with recognised appropriate national standards and codes of practice to cover the following themes:-*

Energy and CO₂ Emissions – seeking, where feasible and viable, carbon neutral development, low carbon sources and decentralised energy generation;

Water – ensuring water efficiency by managing water demand and using such waste water reuse methods as rainwater harvesting and grey water recycling;

Materials - minimising the use of resources and making use of local materials;

Surface Water Run-off – incorporating flood prevention and risk management measures, such as sustainable urban drainage;

Waste – adhering to the waste hierarchy during construction and following development to prevent waste generation and ensure reuse, recovery and recycling;

Pollution – remedying existing pollution or contamination and preventing further pollution arising from development proposals;

Transport – minimising the need for travel and ensuring a balance between transport infrastructure and pedestrians;

Health and Wellbeing – ensuring that the development enhances the quality of life of future occupants and users;

Ecology – valuing and enhancing the ecological features of the development site, where appropriate.

K) *ensuring that developments and their occupants are capable of managing the impact of heat stress and other extreme weather events;*

- L) making a positive contribution towards the vitality of the area through an appropriate mix of uses. In areas of strategic growth this will include employment, community, retail, social, health and recreation facilities (including the protection and provision of informal and formal recreation, parks, open spaces and allotments);*
- M) creating a safe environment which enhances the quality of the public realm;*
- N) making a positive contribution to local distinctiveness, character, townscape and the setting of settlements;*
- O) conserving or enhancing the historic environment including archaeological resources.*

Where appropriate, site specific and area targets, along with detail of viability, to meet national standards and codes, will be set out in the Development Management document, Area Action Plans and the Rural Site Allocations document.

** Only development that will not adversely affect the integrity of the SPA will be permitted. In applying this policy a buffer zone has been defined that extends 1,500m from the edge of those parts of the SPA that support or are capable of supporting stone curlews, within which:-*

- a) Permission may be granted for the re-use of existing buildings and for development which will be completely masked from the SPA by existing development; alternatively*
- b) Permission may be granted for other development not mentioned in sub paragraph (a) provided it is demonstrated by an appropriate assessment that the development will not adversely affect the integrity of the SPA.*

A further 1,500m buffer zone has been defined which extends around those areas (shown on the Proposals Map) outside of the SPA which have supported 5 or more nesting attempts by stone curlew since 1995 and as such act as supporting stone curlew habitat, within which permission may be granted in accordance with a) and b) above. Additionally within this zone, where it can be shown that proposals to mitigate the effects of development would avoid or overcome an adverse impact on the integrity of the SPA or qualifying features, planning permission may be granted provided the Local Planning Authority is satisfied that those proposals will be implemented. In these areas development may also be acceptable providing alternative land outside the SPA can be secured to mitigate any potential effects.

Development at Risby (which lies partly within the 1,500m stone-curlew buffer) will be possible if it is fully screened from the Breckland SPA by existing development. A project level appropriate assessment should be undertaken to ensure no adverse affect upon the integrity of the SPA.

A 400m buffer zone has been defined around those parts of the SPA that support or are capable of supporting nightjar and woodlark. Any development proposal within this zone will need to clearly demonstrate that it will not adversely affect the integrity of the SPA."

Policy DM14: Protecting and Enhancing Natural Resources, Minimising Pollution and Safeguarding from Hazards

“Proposals for all new developments should minimise all emissions and other forms of pollution (including light and noise pollution) and ensure no deterioration to either air or water quality. All applications for development where the existence of, or potential for creation of, pollution is suspected must contain sufficient information to enable the Planning Authority to make a full assessment of potential hazards.

Development will not be permitted where, individually or cumulatively, there are likely to be unacceptable impacts arising from the development on:

the natural environment, general amenity and the tranquillity of the wider rural area;

health and safety of the public;

air quality;

surface and groundwater quality;

land quality and condition; or

compliance with statutory environmental quality standards.

Development will not be permitted where there is an unacceptable risk:

- a. due to siting on known or suspected unstable land; or*
- b. due to siting on land which is known to be or potentially affected by contamination or where the land may have a particular sensitive end use;*
- c. due to the storage or use of hazardous substances.*

Proposals for development on or adjacent to land which is known to be or potentially affected by contamination; or land which may have a particular sensitive end use; or involving the storage and/or use of hazardous substances, will be required to submit an appropriate assessment of the risk levels, site investigations and other relevant studies, and remediation proposals and implementation schedule prior to or as part of any planning application.

In appropriate cases, the local planning authority may impose planning conditions or through a legal obligation secure remedial works and/or monitoring processes.”

Environment SO16

“Ensure new development maximises the potential to reduce its environmental impact including noise, air quality, light pollution, recycling, waste reduction and water efficiency and re-use, and to reduce and phase out use of harmful chemicals.”

Policy LP8 Protecting and enhancing natural resources, minimising pollution and safeguarding from hazards

“All proposals for development should minimise all emissions and other forms of pollution (including light and noise pollution) and ensure no deterioration to either air or water quality. All applications for development where the existence or potential for creation of pollution is suspected, both on and off site, must include a full assessment of the impacts of potential hazards and any necessary mitigation measures which could include a site-specific construction environment management plan (CEMP).

Proposals will be permitted where, the development is, individually or cumulatively, unlikely to result in significant impacts on the following, as appropriate:

- a. The natural environment and general amenities that are intrinsic to the character of the surrounding areas, these can include impact from light, noise, smell, dust and vibrations of nearby areas.*
- b. Health and safety of the public.*
- c. Air quality, on the site and surrounding area.*
- d. Surface or groundwater quality.*
- e. Land quality or condition.*

To safeguard development from potential hazards, development will not be permitted where the proposal is suspected to have an unacceptable risk, such as:

The site being situated on known or suspected unstable land or

The land is known to be or potentially affected by contamination or where the land may have a particular sensitive end use or

The storage or use of hazardous substances on site.

Proposals for development on or adjacent to land which is known to be or potentially affected by contamination; or land which may have a particular sensitive end use; or involving the storage and/or use of hazardous substances, will be required to submit an appropriate assessment of the risk levels as part of any planning application. This assessment of risk should take a tiered approach to include as a minimum a tier one land contamination preliminary risk assessment and where necessary further technical reports.

In appropriate cases, the local planning authority may impose planning conditions or through a legal obligation secure remedial works and/or monitoring processes.”

Policy SPX Development affecting the horse racing industry

“Any development within or around Newmarket which is likely to have a material adverse impact on the operational use of an existing site within the horse racing industry (such as noise, air quality, volume of traffic, horse movements, access and/or servicing requirements), or which would threaten the viability of the horse racing industry as a whole, will only be permitted in exceptional circumstances and where it is demonstrated the benefits would significantly outweigh the harm to the horse racing industry.

Proposals shall include detailed consideration of the movement of horses to and from training, highway safety, network capacity and accessibility for all modes of transport, and measures to reduce any transport impacts of the proposal to an acceptable level to the local highway authority.”

Guidance

- 6.3.19 The Local Air Quality Management Technical Guidance LAQM.TG(22)¹⁰ (August 2022 update) is designed to support local authorities in carrying out their duties under the Environment Act 1995. These duties require local authorities to periodically review and assess air quality in their area.
- 6.3.20 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS, 2007)¹¹ sets out air quality objectives and policy options to further improve air quality in the UK. It provides options which are intended to provide important benefits to UK Air Quality.
- 6.3.21 The effects of dust generation from construction will be assessed at the detailed AQA in accordance with the methodology presented in the Institute of Air Quality Management (IAQM) publication “Guidance on the assessment of dust from demolition and construction” (2024)¹².

6.4 Assessment Methodology and Significance Criteria

- 6.4.1 This section summarises the methodology used to consider whether there are likely significant air pollution impacts on sensitive receptors or constraints on development.

Relevant Elements of the Development

- 6.4.2 The construction and the operation of the Planning Applications are considered relevant to an air quality impact and constraints assessment.

¹⁰ The Local Air Quality Management Technical Guidance LAQM.TG(22) – August 2022 update

¹¹ The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS, 2007)

¹² Institute of Air Quality Management (IAQM) publication “Guidance on the assessment of dust from demolition and construction” (2024)

Scope of the Assessment

- 6.4.3 The potential for air quality impacts has been assessed for different phases. In order to determine the extent to which air quality issues will affect the sensitive receptors, the study has considered the following:
- 1 Any air quality measurements carried out within West Suffolk Council (WSC) administrative boundary;
 - 2 The review and assessment of air quality carried out by WSC for the area, as submitted to the Department for the Environment, Food and Rural Affairs ('DEFRA');
 - 3 Predictions of air pollutant concentrations adjacent to the Site utilising the ADMS Roads dispersion modelling program.
- 6.4.4 Construction dust impacts on local receptors have been assessed using the method detailed in the Institute of Air Quality Management (IAQM) publication 'Guidance on the assessment of dust from demolition and construction' (2024).
- 6.4.5 Construction-related plant emissions have not been explicitly modelled, as these represent a temporary and small source of emissions relative to ambient local conditions in the vicinity of the Site. However, suitable mitigation measures for plant and motorised equipment are presented as part of the mitigation measures, based on advice presented in the relevant guidance.
- 6.4.6 The estimated number of construction vehicles associated with each Application have been considered in the context of the guidance published by Environmental Protection UK (EPUK)/IAQM57. The threshold proposed for determining whether a quantitative assessment of demolition and construction related road traffic required is: "Large, long-term construction sites that would generate large HGV flows (>200 per day) over a period of a year or more."
- 6.4.7 The magnitude of the potential impacts of a construction site on air quality is mainly determined by its size, the range of activities undertaken across the site, proximity to sensitive receptors, complexity of terrain and any barriers between sources and receptors.
- 6.4.8 A qualitative assessment of the potential impacts during construction has been undertaken using information in guidance document produced by IAQM.
- 6.4.9 Operational impacts have been determined by the following which are detailed in the Environmental Protection UK (EPUK) publication Table 5 and Appendix 38:
- 1 Descriptors for the magnitude of change in annual mean concentrations of NO₂ and PM₁₀;
 - 2 The number of days with PM₁₀ concentrations greater than 50 µgm⁻³;
 - 3 The descriptors of the changes to annual mean concentrations of NO₂ and PM₁₀; and
 - 4 The number of days with PM₁₀ concentrations greater than 50 µgm⁻³.

- 6.4.10 The NAQO levels are derived from air quality standards set to protect health. The objectives address social and economic factors as well as the health standards.
- 6.4.11 For the purposes of this assessment, the NAQO forms the basis for the air quality assessment. The NAQO levels are based on an assessment of the effects of each pollutant on public health. Therefore, they are a good indicator in assessing whether the air quality in the vicinity of a road is likely to be detrimental to human health.
- 6.4.12 According to this guidance; a human receptor refers to any location where a person may experience the annoyance effects of airborne dust or dust soiling or exposure to PM₁₀ over a time period relevant to the air quality objectives. In terms of annoyance effects, this will most commonly relate to residential dwellings and schools.
- 6.4.13 Development generated traffic from either Planning Application has the potential to increase levels of NO₂, PM₁₀ and PM_{2.5} along and adjacent to the local highway network. Direct impacts from the operational generated traffic will reduce as distance away from the Application Site increases due to dispersion onto the local highway network.
- 6.4.14 The NAQO levels are derived from air quality standards set to protect health. The objectives address social and economic factors as well as the health standards.
- 6.4.15 For the purposes of the development (both Planning Applications), the NAQO form the basis of the air quality assessment. The NAQO are based on an assessment of the effects of each pollutant on public health. Therefore, they are a good indicator in assessing whether the air quality in the vicinity of a road is likely to be detrimental to human health.
- 6.4.16 The overall significance of air quality effects is described based on the approach outlined in the EPUK/IAQM guidance. The potential change in pollutant concentrations, relative to the baseline considerations, are evaluated at receptors that are representative of exposure to impacts on local air quality within the study area. The assessment also considers the absolute level of pollutant concentrations to identify the risk of the air quality objective values being exceeded.
- 6.4.17 Potential impacts from the proposed development would occur following the completion of the development in 2031. However, the two preceding years 2030 and 2029 have also been assessed in line with the Transport Assessment.
- 6.4.18 Planning proposals are for a “Detailed” application and a “Hybrid” application and both scenarios have been assessed.
- 6.4.19 Therefore, the years of assessment are 2029, 2030 and 2031 “do nothing”, “do something - Detailed” and “do something - Hybrid”. For this development a Transport Assessment (TA) has been undertaken and part of the assessment was the collection and analysis of road traffic data from automated traffic counts (ATC), and the proposed development.

- 6.4.20 Road traffic data has been provided in part by the Transport Consultants (RPS). The remaining traffic data was collected using permanent ATCs and publicly available traffic data for the local highway network. The “Base” traffic flows have been gathered using Trip End Model Presentation Program (TEMPRO) and the National Transport Model (NTM), which considers traffic from Committed Development projects.

Extent of the Study Area

- 6.4.21 The study area extends towards Newmarket, Kentford and the surrounding area. Also included are the SPA and Ramsar Sites to the north east and north west of the Application Sites.

Method of Baseline Data Collation

- 6.4.22 The existing baseline within the Study Area and at sensitive receptors in the local vicinity have been determined by reviewing any air quality data published by WSC in their Annual Status Reports (‘ASR’) and constructing a pollution dispersion model using ADMS-Roads. The model has been verified using monitored local NO₂ concentrations in Newmarket to make sure the modelled results are representative.

Identification of Sensitive Receptors

- 6.4.23 Sensitive receptors have been identified from a review of aerial photography, OS mapping, and includes existing residential dwellings.

Assessment Modelling

- 6.4.24 The future concentrations of NO_x, NO₂, PM₁₀, PM_{2.5} at the locations of WSC diffusion tubes and a selection of representative sensitive receptors in the vicinity of the existing highway network have been predicted using the ADMS - Roads (Version 5.0.1.3) dispersion model based on forecast traffic flows for the local road network.
- 6.4.25 Road traffic data for the local highway network has been collected using automatic traffic count (ATC) (in 2024, see Chapter 13 for further details), the Transport Consultants and from publicly available traffic data. Road traffic data has been growthed using growth factors derived from NTM and adjusted for local factors using TEMPRO.
- 6.4.26 One existing and nine future scenarios have been assessed:
- “Base” (2025);
 - “Future Base” (2029 - do nothing);
 - “Future with Detailed Application” (2029 - do something detailed);
 - “Future with Hybrid Development” (2029 - do something hybrid);
 - “Future Base” (2030 - do nothing);

- “Future with Detailed Application” (2030 - do something detailed);
- “Future with Hybrid Application” (2030 - do something hybrid);
- “Future Base” (2031 - do nothing);
- “Future with Detailed Application” (2031 - do something detailed); and
- “Future with Hybrid Application” (2031 - do something hybrid).

- 6.4.27 The local highway network has been modelled as distinctive links where vehicle speeds change, the width of roads change, and at junctions. Also included are changes in vehicle speed due to pedestrian crossings and traffic lights.
- 6.4.28 Background concentrations of air pollutants for the dispersion modelling were obtained from the UK National Air Quality Information Archive (DEFRA website), in accordance with Local Air Quality Management Technical Guidance TG(22). Data sets for 2021- based background maps for years 2021 to 2040 have been published by DEFRA.
- 6.4.29 Model verification has been undertaken using the guidance provided in LAQM.TG (22). The process requires the comparison of the monitored roadside contribution of NO₂ with the modelled roadside contribution of NO₂. The site type definitions have been taken from WSC 2024 ASR.

Significance Criteria

Construction Phase

- 6.4.30 During the construction phase, there will be a number of activities undertaken that have the potential to generate and/or re-suspend dust and PM₁₀. At the time of assessment, the exact activities to be undertaken during construction are unknown. However, in order to evaluate the magnitude and extent of potential adverse impacts likely to result from the proposed development, the following construction activities have been assumed:
- storage of materials;
 - laying of hard surfaces;
 - construction of buildings; and
 - vehicle movements to and from the Site.
- 6.4.31 The magnitude of the potential impacts of a construction site on air quality is mainly determined by its size, the range of activities undertaken across the site, proximity to sensitive receptors, complexity of terrain and any barriers between sources and receptors.
- 6.4.32 A qualitative assessment of the potential impacts during construction has been undertaken using information in guidance documents produced by IAQM.

- 6.4.33 According to this guidance; a human receptor refers to any location where a person may experience the annoyance effects of airborne dust or dust soiling or exposure to PM₁₀ over a time period relevant to the air quality objectives. In terms of annoyance effects, this will most commonly relate to residential dwellings and schools.
- 6.4.34 Activities on construction sites can be divided into four types to reflect their different potential impacts, with the potential for dust emissions to be assessed only for each activity taking place:
- Site Preparation;
 - Earthworks;
 - Construction; and
 - Trackout.
- 6.4.35 The assessment methodology considers three separate dust effects:
- annoyance due to soiling;
 - harm to ecological receptors; and
 - the risk of health effects due to a significant increase in exposure to PM₁₀.
- 6.4.36 Account is also to be taken of the distance of the receptors that may experience these effects. The assessment procedure assumes no mitigation measures are applied except those required by legislation.
- 6.4.37 The potential dust emission magnitude for the proposed Development Site is determined for the four construction activities using the criteria presented in IAQM guidelines. The magnitude is based on the scale of the anticipated works and classified as “Small”, “Medium” or “Large”.
- 6.4.38 The “Sensitivity of an Area” to dust soiling effects on people and property is determined by using the criteria presented in Table 6.2. The “Sensitivity of an Area” to human health impacts is presented in
- 6.4.39 Table 6. 3. The “Sensitivity of an Area” and to ecological impacts is presented in
- 6.4.40 Table 6. 4.

Table 6.2: Sensitivity of the area to dust soiling effects on people and property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low

Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 6. 3: Sensitivity of the area to human health impacts

Receptor Sensitivity	Annual Mean PM ₁₀ conc.	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µgm ⁻³ (>18 µgm ⁻³ in Scotland)	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µgm ⁻³ (16-18 µgm ⁻³ in Scotland)	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µgm ⁻³ (14-16 µgm ⁻³ in Scotland)	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µgm ⁻³ (<14 µgm ⁻³ in Scotland)	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µgm ⁻³ (>18 µgm ⁻³ in Scotland)	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µgm ⁻³ (16-18 µgm ⁻³ in Scotland)	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µgm ⁻³ (14-16 µgm ⁻³ in Scotland)	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µgm ⁻³ (<14 µgm ⁻³ in Scotland)	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>=1	Low	Low	Low	Low	Low

Table 6. 4: Sensitivity of the area to ecological impacts

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

- 6.4.41 Once the potential dust emissions magnitude and the sensitivity of the area have been determined the results can be combined to define the risks of impact using the criteria in Table 6. 5, and Table 6. 7.

Table 6. 5: Risk of Dust Impacts – Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 6. 6: Risk of Dust Impacts – Earthworks and Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 6. 7: Risk of Dust Impacts – Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	Medium Risk	Low Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Operational Phase

- 6.4.42 The impact of local traffic growth, development generated traffic and other potential sources of air pollution have been assessed for the magnitude of change and for the extent to which change in air quality from existing to future levels would be significant.
- 6.4.43 Descriptors for the magnitude of change in annual mean concentrations of NO₂ and PM₁₀ and the number of days with PM₁₀ concentrations greater than 50 µgm⁻³ are presented in Table 6. 8.

Table 6. 8: Descriptions for the magnitude in changes in annual mean concentrations of NO₂ and PM₁₀ and the number of days with PM₁₀ concentrations greater than 50 µgm⁻³

Magnitude Change	of Annual Mean NO ₂ /PM ₁₀	Days PM ₁₀ >50 µgm ⁻³
Large	Increase/decrease >4 µgm ⁻³	Increase/decrease >4 days
Medium	Increase/decrease 2 - 4 µgm ⁻³	Increase/decrease 2 - 4 days
Small	Increase/decrease 0.4 - 2 µgm ⁻³	Increase/decrease 1 - 2 days
Imperceptible	Increase/decrease <0.4 µgm ⁻³	Increase/decrease <1 day

- 6.4.44 Following on from the determination of the magnitudes of the impact of change of NO₂ and PM₁₀ levels, the assessment of the significance of the impact with reference to the NAQO Levels can be undertaken. Descriptors of the changes to annual mean concentrations of NO₂ and PM₁₀ and the number of days with PM₁₀ concentrations greater than 50 µgm⁻³ are presented in Table 6.9.

Table 6.9: Impact descriptors for changes to annual mean concentrations of NO₂ and PM₁₀ and the number of days with PM₁₀ concentrations greater than 50 µgm⁻³

Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration /Number of Days		
	Small	Medium	Large
Increase with Scheme			
Above Objective/Limit Value with Scheme (>40 µgm ⁻³ / >35 days)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value with Scheme (36-40 µgm ⁻³ / >32-35 days)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value with Scheme (30-36 µgm ⁻³ / >26-32 days)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value with Scheme (<30 µgm ⁻³ / <26 days)	Negligible	Negligible	Slight Adverse
Decrease with Scheme			
Above Objective/Limit Value Without Scheme (>40 µgm ⁻³ / >35 days)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just Below Objective/Limit Value Without Scheme (36-40 µgm ⁻³ / >32-35 days)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value Without Scheme (30-36 µgm ⁻³ / >26-32 days)	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value Without Scheme (<30 µgm ⁻³ / <26 days)	Negligible	Negligible	Slight Beneficial
Note – an “Imperceptible” change would be described as “Negligible”			

Significance of Effects

- 6.4.45 For the purposes of the EIA, moderate and above are considered significant and the following terminology is used:

- Major Adverse or Beneficial;

- Moderate Adverse or Beneficial;
- Minor Adverse or Beneficial;
- Negligible, and
- Nil/Neutral.

Limitations and Assumptions

- 6.4.46 The dust assessment during the construction has been undertaken for a “worst case” scenario where there are no mitigation measures other than those required by Legislation.
- 6.4.47 It is unknown how the local environment will change over the next 5 to 10 years but it can be assumed that road traffic will increase through natural growth. This has the potential to change the local air quality through changes in road traffic flows. Therefore, predicted traffic flows have been used for modelling future scenarios.

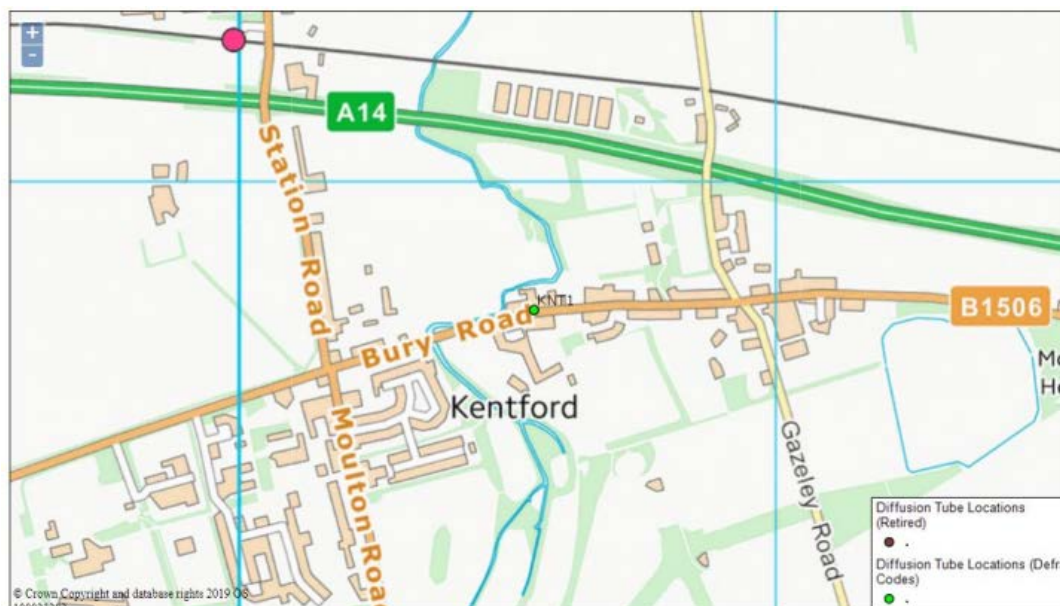
6.5 Baseline Conditions

Current Conditions

Air Quality Review and Assessment

- 6.5.1 Local Authorities are required to carry out a review of local air quality within their boundaries to assess areas that may fail to comply with the NAQO. In areas where these objectives are unlikely to be achieved, local authorities must designate these areas as Air Quality Management Areas (‘AQMA’s’) and prepare a written Action Plan to achieve the NAQO.
- 6.5.2 The review of air quality takes on several prescribed stages, of which each stage is reported. The review and assessment of air quality adjacent to the Site is the responsibility of West Suffolk Council (WSC). The results are reported in an Annual Status Report (‘ASR’) and at the time of undertaking this assessment the latest ASR is 2024 which reports the results up to the end of 2023.

- 6.5.3 WSC have declared one AQMA within their administrative boundary. The AQMA is located on the A143 in Great Barton which is approximately 19km east of the Application Sites.



Air Quality Monitoring

- 6.5.4 WSC did not undertake any continuous monitoring in 2023. WSC did undertake passive monitoring of NO₂ at 80 sites in 2023. No particulate matter (PM₁₀) monitoring is currently undertaken. Detailed below are the results of the passive monitoring of NO₂ up to the end of 2023.

Passive Monitoring - Diffusion Tubes

- 6.5.5 WSC operates a network of non-automatic (passive) monitoring sites within its administrative boundary and at the end of 2023 there were 80 active sites monitoring NO₂ via diffusion tube (DT). Refer to Figure 6.1 and Figure 6.2 for the locations of the diffusion tubes closest to the Application Sites.

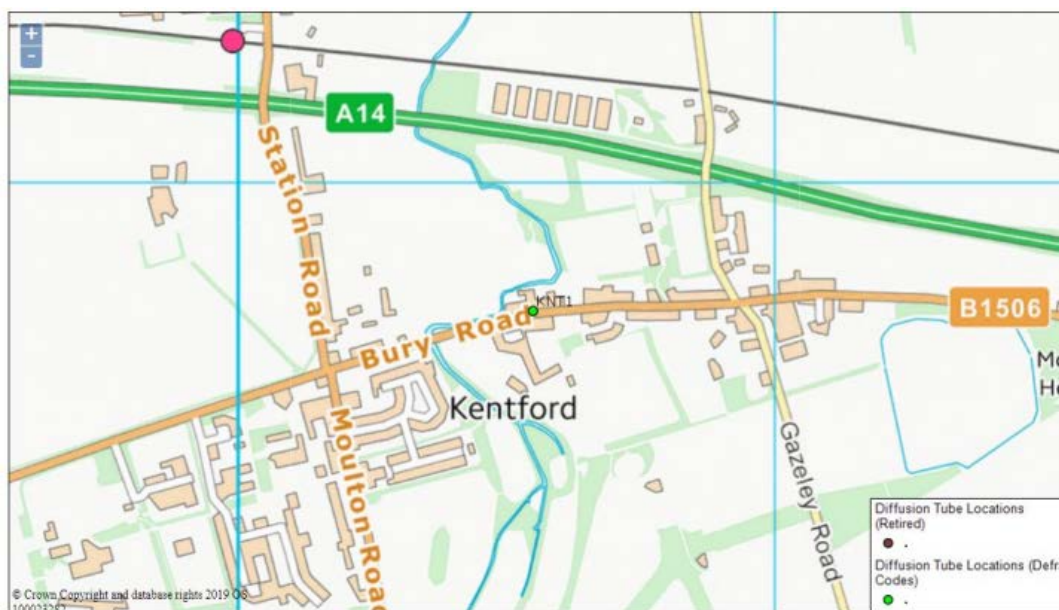


Figure 6.1: Non-Automatic (DT) Monitoring Sites within Kentford which is East of the Application Sites (Ref: WSC ASR 2024)

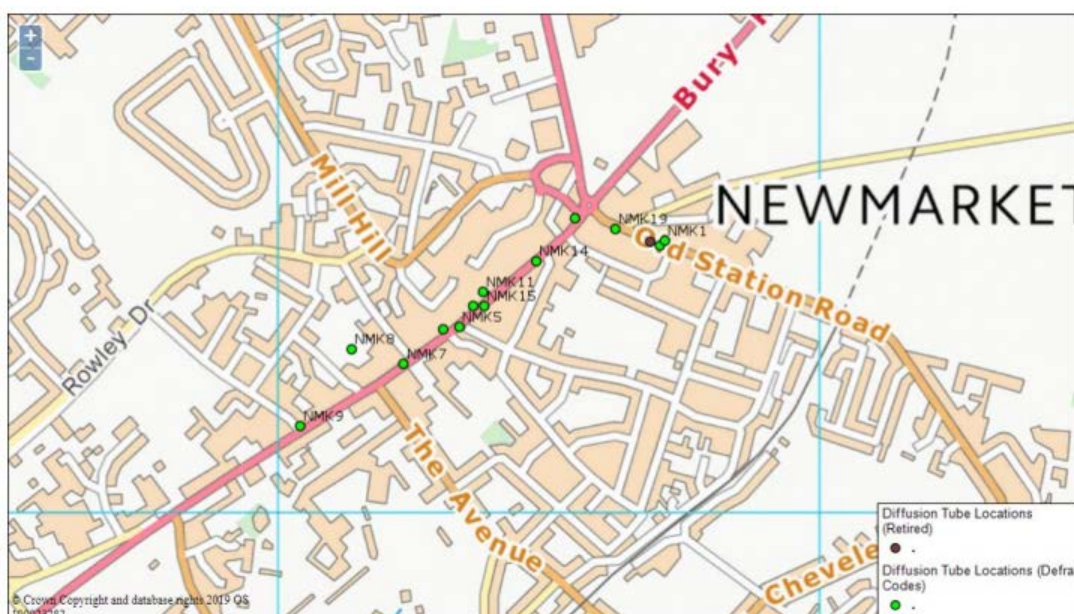


Figure 6.2: Non-Automatic (DT) Monitoring Sites within Newmarket which are West of the Application Sites (Ref: WSC ASR 2024)

- 6.5.6 The DT locations within Kentford and Newmarket represent “Roadside”, “Kerbside” and “Urban Background” concentrations. The closest DT to the Site is located within Kentford.
- 6.5.7 Presented in Table 6.10 are recorded concentrations of NO₂ available for 2019 to 2023 in Kentford and Newmarket and where concentrations are at or above the NAQO level the cells have been shaded light grey.

Table 6.10: Measured Annual Mean NO₂ Concentrations (µgm⁻³) – DT (Ref: WSC ASR 2024)

Site ID	Location	Within AQMA?	Annual mean concentrations (µgm ⁻³)				
			2019	2020	2021	2022	2023
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	N	-	-	-	-	12.1
NMK1	23 Old Station Road	N	23.9	19.5	20.9	20.2	17.3
NMK3	Old Station Road and Rous Road	N	27.1	21.3	20.9	20.8	17.6
NMK5	Café Nero' crossing	N	28.7	21.1	24.4	23.7	21.3
NMK6	KFC' downpipe	N	24.6	18.9	22.6	22	20.7
NMK7	White Hart' crossing	N	30.5	22.2	25	25.6	22.1
NMK8	"Newmarket – Park area"	N	14	11.6	10.6	11.1	9.3
NMK9	Blackbear Lane, and High Street	N	24.2	18.7	21.5	22.4	18.9
NMK10	Taxi rank	N	33.1	25.2	27.3	27.4	25.2
NMK11	Market St 'EE'	N	17.2	12.9	13.9	14	11.9
NMK12	Clock tower, crossing	N	30.3	23.9	25.8	26.3	22.3
NMK14	Rutland Arms' crossing	N	28.4	22	23	23.3	20.2
NMK15	'Savers' lamppost	N	29.4	23.5	24.1	25.5	22.3
NMK19	Old Station Road, Nancy's Tearoom	N	31	23.2	24.8	25.2	21.1

- 6.5.8 From Table 6.10 all annual mean concentrations of NO₂ were well below the NAQO level of 40 µgm⁻³ up to the end of 2023.
- 6.5.9 Presented in Figure 6.3 are the annual trends in NO₂ concentrations since 2019 within Kentford and Newmarket.

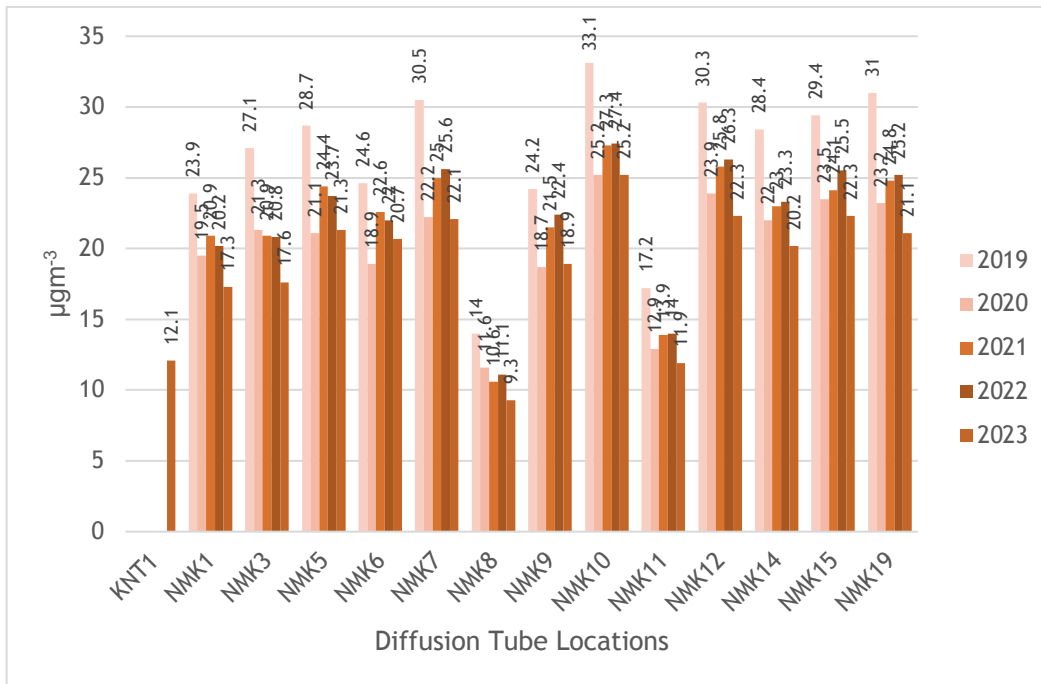


Figure 6.3: Annual Trends in NO₂ Concentrations Since 2019 within Kentford and Newmarket

6.5.10 From Figure 6.3 it can be seen that overall concentrations of NO₂ have decreased following the Covid pandemic. There has been a slight increase in the period 2020 to 2021 which is probably due to a combination of travel patterns returning to normal following Covid. However, there has been a decrease in concentrations since 2021.

6.5.11 The West Suffolk 2024 ASR concluded that:

“Air quality in West Suffolk continues to be relatively good, with all the monitored locations being below (that is compliant with) the air quality objectives. Most monitoring locations in 2023 were relatively similar to 2022 but were below prepandemic levels at every location which is consistent with the long-term downward trend in nitrogen dioxide pollution levels. Nitrogen dioxide monitoring will continue throughout the district, including within the AQMA.

West Suffolk continues to grow, with major developments in Bury St Edmunds and Haverhill both continuing. It is important for West Suffolk to continue to monitor throughout the area and react to any new information that becomes available.”

Road Traffic Data

6.5.12 The future concentrations of NO_x, NO₂, PM₁₀, PM_{2.5} at the locations of WSC diffusion tubes and a selection of representative sensitive receptors in the vicinity of the existing highway network have been predicted using the ADMS - Roads (Version 5.0.1.3) dispersion model based on forecast traffic flows for the local road network.

- 6.5.13 Road traffic data for the local highway network has been collected using automatic traffic count (ATC), the Transport Consultants and from publicly available traffic data. Road traffic data has been growthed using growth factors derived from NTM and adjusted for local factors using TEMPRO.
- 6.5.14 The “Base” scenario vehicle flows on the local highway network used in the assessment are presented at Appendix 6.1 (AADT Traffic flow data (no development generated traffic) 2025).
- 6.5.15 The local highway network has been modelled as distinctive links where vehicle speeds change, the width of roads change, and at junctions. Also included are changes in vehicle speed due to pedestrian crossings and traffic lights.

Background Concentrations of Air Pollutants

- 6.5.16 Background concentrations of air pollutants for the dispersion modelling were obtained from the UK National Air Quality Information Archive (DEFRA website), in accordance with Local Air Quality Management Technical Guidance TG(22). Data sets for 2021 (background maps for years 2021 – 2040) have been published by DEFRA. Presented in Table 3.14 of Appendix 6.1 are the background concentrations of NO_x, NO₂, PM₁₀ and PM_{2.5} for the years 2025, 2029, 2030 and 2031 covering both Application Sites, Kentford Village and Newmarket.

Dispersion Modelling – ADMS-Roads

- 6.5.17 The existing and future concentrations of pollutants within the assessment area for all scenarios have been modelled using the Atmospheric Dispersion Modelling System software ADMS-Roads. The software is PC based and models the release of pollutants from road and industrial sources into the atmosphere.
- 6.5.18 ADMS-Roads is designed to allow the modelling of simple scenarios such as single carriageway roads up to complex scenarios such multiple lane roads and junctions. Allowance is made in the model for initial release of pollutants which are affected by vehicle wake, traffic induced turbulence and street canyons. Boundary layer structure based on the Monin-Obukhov length and the boundary layer height are incorporated in the model which allows for a realistic representation of the changing characteristics of dispersion with height.
- 6.5.19 Multiple road traffic sources were used in the model to represent the changing concentration of traffic, the different speeds of traffic and the changing road geometry.
- 6.5.20 Representative meteorological data for 2019 covering the assessment area was obtained from ADM Ltd. The closest representative site is at Mildenhall. The MET data has been used for the verification of the model, base modelling and future years and a wind rose for 2019 is presented in Appendix 4 of Appendix 6.1.
- 6.5.21 Background pollutant concentrations for the kilometre squares covering the study area were obtained from the Defra website. The years obtained are for 2019 (Verification), 2025 (Base year) and 2029, 2030 and 2031 (Future years).

Model Verification

- 6.5.22 Model verification has been undertaken using the guidance provided in LAQM.TG (22). The process requires the comparison of the monitored roadside contribution of NO₂ with the modelled roadside contribution of NO₂. The site type definitions have been taken from WSC 2024 ASR. Further details of the model verification are presented in Appendix 6.1.

Summary of Sensitive Receptors

- 6.5.23 Based on a review of the baseline conditions, Table 6.11 presents the residential receptors likely to be affected by the Applications, and Table 6.12 presents the ecological receptors. They consider the location of the receptor and its relationship with the Applications.
- 6.5.24 The residential sensitive receptors are: R1 which is to the east of Sire Lane; R2 which is to the west of the Application Sites; R3 which is to the north east of the cross roads of Bury Road, Moulton Road and Station Road; R4 which is to the East of Kentford; and R5 which is to the south west of the cross roads of Bury Road, Moulton Road and Station Road.
- 6.5.25 The ecological receptors are: E1 Breckland SPA to the east of the Application Sites; E2 Chippenham Fen to the north west of the site; and E3 Wicken Fen to the east of the Site.

Table 6.11: Sensitive Receptor

Modelled Sensitive Receptor		X	Y	Receptor Height (m)
R1	4 Byerley Cl	569821	266505	2
R2	53 Bury Road	565451	264609	2
R3	Bell Inn PH	570176	266660	2
R4	Flint Cottages	571537	266762	2
R5	Lanwades House	570163	266640	2

Table 6.12: Ecological Sensitive Receptor

Site ID	Site	Designation	X	Y	Distance From Site (km)	Distance from Nearest Affected Road (m)
E1	Breckland SPA	SPA	577687	266107	2.2	25
E2	Chippenham Fen	Ramsar	565429	269767	4.6	200

E3	Wicken Fen	Ramsar	557136	270151	13.3	200
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6.5.26 Presented in **Figures 6.4** and **6.5** are the locations of the residential and ecological receptors respectively.

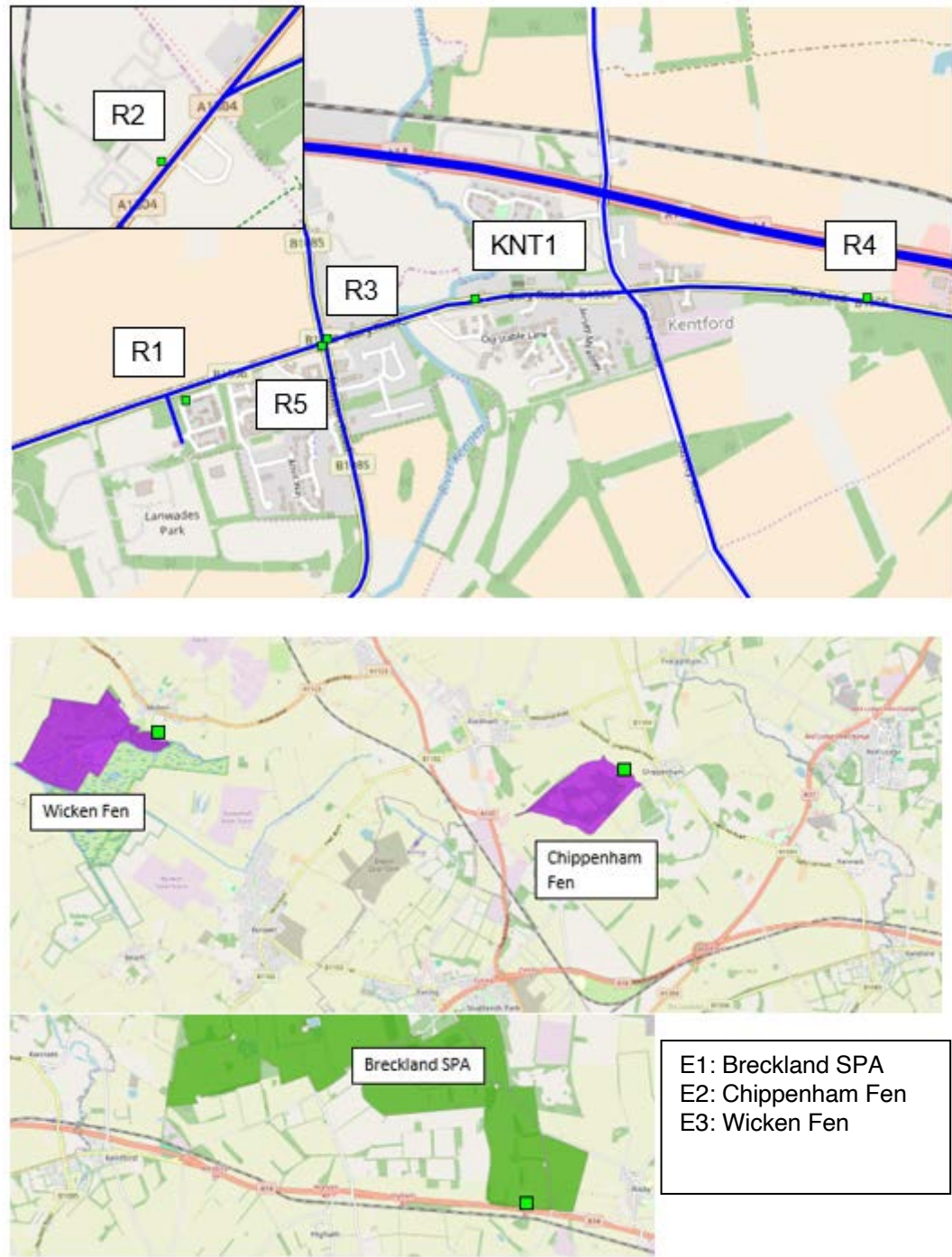


Figure 6.5: Ecological Receptor Location Plan

6.5.27 The results of the predictions for 2025 concentrations at DT and existing residential receptors are presented in Table 6.13 and ecological receptors are presented in Table 6.14

Table 6.13: Predicted Air Quality Concentrations at Existing Sensitive Receptors 2025

Receptor Number and Name		NO _x	NO ₂	PM ₁₀		PM _{2.5}
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	11.45	9.31	14.69	0.12	9.66
R2	53 Bury Road	18.64	13.49	14.48	0.13	9.37
R3	Bell Inn PH	20.68	14.14	18.97	2.26	10.02
R4	Flint Cottages	17.76	12.17	17.88	1.31	10.09
R5	Lanwades House	19.74	13.67	18.91	2.20	9.98
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	19.66	13.56	18.83	2.12	9.94
NMK1	23 Old Station Road	32.87	20.26	16.11	0.35	10.38
NMK3	Taxi rank	28.86	18.31	15.85	0.27	10.25
NMK5	Market St 'EE'	30.68	19.15	15.96	0.30	10.31
NMK6	Clock tower, crossing	37.22	22.03	16.19	0.38	10.43
NMK7	Rutland Arms' crossing	28.47	18.13	15.83	0.26	10.23
NMK8	'Savers' lamppost	27.90	17.86	15.79	0.26	10.22
NMK9	Old Station Road, Nancy's Tearoom	30.38	19.08	15.85	0.27	10.25
NMK10	Old Station Road and Rous Road	28.43	18.21	15.84	0.27	10.24
NMK11	Café Nero' crossing	27.95	17.89	15.80	0.26	10.22
NMK12	KFC' downpipe	28.53	18.15	15.83	0.27	10.24
NMK14	White Hart' crossing	28.86	18.31	15.85	0.27	10.25
NMK15	"Newmarket – Park area"	15.44	11.80	15.04	0.13	9.82
NMK19	Blackbear Lane, and High Street	28.84	18.29	15.85	0.27	10.25
NAQO		-	40	40	35	25

6.5.28 When the pollutant concentrations in **Table 6.13** are compared to the NAQO, concentrations of NO₂ and PM₁₀ are predicted to be well below the level of 40 μgm^{-3} and the number of days when the concentration of PM₁₀ is greater than 50 μgm^{-3} is well below 35 days. It can also be seen that the concentrations of PM_{2.5} are well below 25 μgm^{-3} .

Table 6.14: Predicted NO_x Concentrations at Ecological Receptors 2025

Receptor Number and Name		NO _x
		Annual mean µgm ⁻³
E1	Breckland SPA	7.28
E2	Chippenham Fen	5.97
E3	Wicken Fen	6.30

Future Baseline

- 6.5.29 Without the Applications, it is likely that the Air Quality conditions would remain the same as the current conditions. This is evident from the historic air quality monitoring in WSC not showing a definitive reduction or increase in pollution levels over the last five years.
- 6.5.30 Without the Applications but with cumulative schemes it is likely that there would be increased traffic on the highway network, and as a result there could be increased air pollution.
- 6.5.31 The evolution of the baseline, referred to as the 'do-nothing' scenario, assumes that all cumulative schemes (namely the Kennet Garden Village, Land at Former St Felix School and Hatchfield Farm cumulative schemes) are built and that all associated traffic movements are included within the traffic flows provided. This scenario effectively describes the future environment in the absence of the either Application coming forward.
- 6.5.32 The aforementioned variables (no change in background pollutants and increase in road traffic flows) have been considered when calculating the future baseline conditions for 2029, 2030 and 2031.

6.6 Assessment of Effects, Mitigation and Residual Effects

- 6.6.1 This section of the chapter details the embedded mitigation within each Application, and the potential effects of the development on air quality.
- 6.6.2 The "Site Enabling and Construction" assessment looks at a "worst case" scenario of the potential impacts from the Hybrid Planning Application (i.e. Eastern and Western Parcel). The Detailed Application impacts are considered to be less than that of the Hybrid planning Application.

Hybrid application (Eastern Parcel and Western Parcel)*Effects*Site Enabling and Construction

- 6.6.3 During construction there is a potential for short term impacts to air quality from activities within the Site (dust generation) and vehicle and plant movements and emissions (dust and PM₁₀). The impacts will be

limited to within 350 metres of site activities (dust) and up to 500 metres along the B1506 from the site entrance for vehicle and plant movements and emission (dust and PM₁₀).

- 6.6.4 During the construction, there are potential impacts due to dust soiling and increased PM₁₀ levels from four distinct processes which are: demolition; earthworks; construction; and trackout. Due to the site being open space with no significant structures, there is low risk of impacts on air quality from demolition. However, there is a greater potential for impacts during earthworks, construction, and trackout.
- 6.6.5 The main sources of dust and PM₁₀ during construction activities are:
- Haulage routes, vehicles, and construction traffic;
 - Materials handling, storage, stockpiling, potential spillage, and disposal;
 - Exhaust emissions from site plant;
 - Site preparation;
 - Construction and fabrication processes; and
 - Internal and external finishing and refurbishment.
- 6.6.6 Most releases are likely to occur during the typical “working-week”. The construction impact assessment has been split into two sections. The first deals with the potential impacts from dust soiling and changes in PM₁₀ concentrations due to on-site works and the second deals with the effect of emissions and construction traffic.
- 6.6.7 The site will require earthworks, construction and trackout of vehicles associated with all phases of the Site. The resulting dust emission magnitudes are:
- Earthworks – Medium (Total site area 18,000 m² to 110,000 m², moderately dusty soil type (e.g. silt), 5 to 10 heavy earth moving vehicles active at any one time, formation of bunds 3m to 6m in height);
 - Construction – Medium (Total building volume 12,000 m³ – 75,000 m³, potentially dusty construction material (e.g. concrete), on site concrete batching);
 - Trackout – Medium (20 to 50 HDV (>3.5t) outward movements in any one day, 10 moderately dusty surface material (e.g. high clay content), unpaved road length 50 m to 100 m).
- 6.6.8 Using the above information and the criteria presented in **Table 6. 5**, **Table 6. 6** and **Table 6. 7**, the sensitivity of the construction can be defined. The results of defining the sensitivity of the area are presented in

6.6.9 **Table 6.15.**

Table 6.15: Outcome of Defining the Sensitivity of an Area

Potential Impact	Sensitivity of the Surrounding Area			
	<i>Demolition</i>	<i>Earthworks</i>	<i>Construction</i>	<i>Trackout</i>
<i>Dust Soiling</i>	N/A	Low	Low	Low
<i>Human Health</i>	N/A	Low	Low	Low
<i>Ecological</i>	N/A	Negligible	Negligible	Negligible

6.6.10 From

- 6.6.11 **Table 6.15** it can be seen that the predicted sensitivity of the surrounding area to dust soiling is “Low” during the earthworks and construction phases and during trackout. The sensitivity of the surrounding area to changes in PM₁₀ affecting human health is “Low” during the construction and earthworks phase and during trackout. As there are no ecological receptors within 50m of the development, the predicted sensitivity impact is “Negligible”.
- 6.6.12 The dust emission magnitude determined in paragraph 6.6.7 is combined with the sensitivity of the area summarised in

- 6.6.13 **Table 6.15** to determine the risk of impacts with no mitigation applied. The risk of impacts are summarised in **Table 6.16**.

Table 6.16: Summary Dust Risk Table to Define Site-Specific Mitigation

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	Low	Low	Low
Human Health	N/A	Low	Low	Low
Ecological	N/A	Negligible	Negligible	Negligible

- 6.6.14 During the Earthworks and Construction phases of development and due to Trackout, there is a Low Risk of annoyance caused by dust soiling and health effects due to increase exposure in PM10.
- 6.6.15 For those cases where the risk category is Negligible (i.e. ecological), no specific mitigation measures is required beyond specific legislation.

Mitigation

- 6.6.16 Monitoring during the construction phase should be considered in the management of operations to ensure that the nuisance thresholds are not exceeded at nearby sensitive locations. However, it is important to note that such limits are subjective (as “nuisance” caused by dust does not currently have a statutory limit applied to it).
- 6.6.17 Monitoring of dust could be achieved using a variety of sampling techniques, for example deposit (“Frisbee”) gauges, glass slides or high-volume air samplers located around the site perimeter and at the sensitive locations up to 400 metres from the site boundary.
- 6.6.18 In addition, there are several Best Practice mitigation measures that can be used by contractors to ensure that the impacts experienced in close proximity to the construction site are minimal. Sample mitigation:

Specific to demolition (for information only):

- Ensure effective water suppression is used during demolition operations;
- Avoid explosive blasting, using appropriate manual or mechanical alternatives;
- Bag and remove any biological debris or damp down such material before demolition; and

Effective site planning:

- Erect solid barriers to site boundary;
- Dust generating activities to be located away from sensitive receptors;
- All site personnel will be fully trained;

- There will be a trained and responsible manager on site during working times to maintain a logbook and carry out site inspections;
- There will be no runoff of mud or water from the site;
- Relevant legislation and guidance will be adhered to; and

Construction Traffic

- All vehicles to switch off engines (no idling);
- On road vehicles will comply to set emission standards;
- Effective vehicle cleaning and specific wheel-washing on leaving site;
- All loads entering site must be covered;
- All non-road mobile machinery (NRMM) should use ultra-low sulphur diesel where available; and

Site Activities

- Minimise dust generating activities where possible;
- Use water as a dust suppressant where applicable;
- Stockpiles will be covered, enclosed, seeded or kept them sheeted; and
- If applicable, any concrete crushers/batchers will have the required permits.

- 6.6.19 It is recommended that liaison with West Suffolk Council Environmental Health Department be maintained throughout the construction process. In addition, the main contractor should nominate a representative (possibly the site manager) to act as a point of contact with the Council, the construction team and the local community to ensure that any air quality related issues that occur during the construction period can be dealt with efficiently, effectively and promptly.
- 6.6.20 All other site sub-contractors should also nominate or appoint a suitable team member responsible for liaison with the lead contractor's representative and to ensure that sub-contractor construction activities are managed effectively.
- 6.6.21 Details of the proposed methodology for achieving this and procedures to follow should be set out in a Construction Environmental Management Plan (CEMP), which can be secured via a standard planning condition. This would be held on-site and would include relevant contact names, details, lines of communication and mitigation action plans. The document should be available to all site personnel who should be made aware of its existence and provide an undertaking that they will adhere to the guidance provided therein.
- 6.6.22 The mitigation of PM₁₀ releases due to material disturbance will be achieved in the same manner as the control of dust releases. By achieving effective control of sources of dust release, PM₁₀ releases can be minimised.

- 6.6.23 The most effective control of particulate releases from site plant will be achieved by ensuring that it is maintained in good working order and is of the appropriate capacity and specification for the job being carried out. It should also be located away from the site perimeter, thereby maximizing the distance between source and receptor.
- 6.6.24 There may be occasions where breakdown of site plant could cause short-term releases of excess particulate matter (smoke) and odour. Short-term releases may also occur during start up (of diesel engines, etc.). Regular visual checks and routine maintenance should be applied in accordance with the plant specification, to ensure that these releases are minimised. Faulty site plant should be decommissioned until repairs have been carried out and have been tested and found to be operating satisfactorily.
- 6.6.25 Detailed mitigation measures to control construction traffic should be discussed with officers from West Suffolk Council, to establish the most suitable access routes for the site traffic and service vehicles. The most effective mitigation will be achieved by ensuring that construction traffic vehicles are kept clean and sheeted when on public highways (using wheel washers) and avoid using sensitive roads. Timing of large-scale vehicle movements to avoid peak hours on the local road network would also be beneficial. Clear signposting to the site access for construction traffic should also be provided and direct traffic along routes agreed with the Council.
- 6.6.26 Early morning delivery vehicles, which may arrive prior to the site opening, should be prevented from waiting on the approach roads to the site. If site deliveries arrive prior to the site opening, they should wait at a suitable location, and if possible, turn the engine off.
- 6.6.27 With the implementation of the appropriate mitigation measures detailed above, but not restricted to the information detailed above, the residual effects will normally be “Not Significant”.

Residual Effects

- 6.6.28 With the implementation of the appropriate mitigation measures detailed above, the residual effects for the construction phase will normally be “Negligible” and “Not Significant”.

Hybrid Application (Eastern and Western Parcels)

- 6.6.29 The results from the Site Enabling and Construction assessment for the Hybrid Application indicate that the residual effects will be Negligible and Not Significant with the implementation of the appropriate mitigation measures.
- 6.6.30 The Detailed Application proposes the construction of 300 homes only it is highly unlikely that the impacts from construction activities will be greater than those for Hybrid Application. Therefore, it is considered that the residual effects for the Detailed Application will be Negligible and Not Significant with the implementation of the appropriate mitigation measures.

6.7 Operation

Detailed Application (Eastern Parcel)

- 6.7.1 Worst-case flows arising from the Detailed Application generated traffic has then been added to the 2029, 2030 and 2031 traffic flows and the results are presented in Appendix 5 of Appendix 6.1.
- 6.7.2 Road traffic flows are predicted to change by between 0% and 282% due to Eastern Parcel development generated traffic in 2029, 2030 and 2031 (greatest change is predicted to be on Sire Lane which is in the development boundary).

Effects – 2029

- 6.7.3 Sensitive receptors adjacent to the Site and where there is predicted to be an impact from the development have been assessed for the two scenarios, “do nothing” and “do something - detailed”. The results from the assessment are presented in
- 6.7.4 **Table 6.17** and **Table 6.18**.

Table 6.17: Predicted air quality concentrations at sensitive receptors in 2029 “do nothing”

Receptor Number and Name		NO _x	NO ₂	PM ₁₀		PM _{2.5}
		Annual mean µgm ⁻³	Annual mean µgm ⁻³	Annual mean µgm ⁻³	Days >50 µgm ⁻³	Annual mean µgm ⁻³
R1	4 Byerley Cl	10.11	8.49	14.69	0.12	9.66
R2	53 Bury Road	15.28	11.35	14.48	0.13	9.37
R3	Bell Inn PH	16.48	11.75	19.02	2.31	10.04

R4	Flint Cottages	14.00	10.04	17.90	1.33	10.10
R5	Lanwades House	15.74	11.40	18.94	2.23	10.00
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	15.71	11.38	18.86	2.15	9.96
NMK1	23 Old Station Road	24.56	15.99	16.11	0.35	10.37
NMK3	Taxi rank	21.90	14.77	15.84	0.27	10.23
NMK5	Market St 'EE'	21.54	14.60	15.79	0.25	10.21
NMK6	Clock tower, crossing	21.88	14.76	15.82	0.26	10.23
NMK7	Rutland Arms' crossing	22.08	14.85	15.84	0.27	10.24
NMK8	'Savers' lamppost	14.11	11.06	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	22.06	14.84	15.84	0.27	10.24
NMK10	Old Station Road and Rous Road	22.08	14.85	15.84	0.27	10.24
NMK11	Café Nero' crossing	23.16	15.35	15.95	0.30	10.29
NMK12	KFC' downpipe	27.08	17.13	16.18	0.38	10.42
NMK14	White Hart' crossing	21.84	14.74	15.82	0.26	10.23
NMK15	Newmarket - Park area	21.50	14.58	15.79	0.25	10.21
NMK19	Blackbear Lane, and High Street	23.08	15.31	15.85	0.27	10.24
NAQO		-	40	40	35	25

Table 6.18: Predicted air quality concentrations at sensitive receptors in 2029 “do something - detailed”

Receptor Number and Name		NO _x	NO ₂	PM ₁₀		PM _{2.5}
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	10.35	8.61	14.72	0.12	9.67
R2	53 Bury Road	15.39	11.40	14.48	0.13	9.37
R3	Bell Inn PH	16.97	11.98	19.07	2.36	10.07
R4	Flint Cottages	14.24	10.16	17.93	1.35	10.11
R5	Lanwades House	16.19	11.61	18.99	2.28	10.02
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	16.05	11.54	18.90	2.19	9.98
NMK1	23 Old Station Road	24.67	16.04	16.12	0.35	10.38
NMK3	Taxi rank	21.99	14.81	15.85	0.27	10.24

NMK5	Market St 'EE'	21.61	14.63	15.80	0.26	10.21
NMK6	Clock tower, crossing	21.96	14.80	15.83	0.27	10.23
NMK7	Rutland Arms' crossing	22.16	14.89	15.85	0.27	10.24
NMK8	'Savers' lamppost	14.12	11.07	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	22.15	14.88	15.85	0.27	10.24
NMK10	Old Station Road and Rous Road	22.16	14.89	15.85	0.27	10.24
NMK11	Café Nero' crossing	23.25	15.39	15.96	0.30	10.30
NMK12	KFC' downpipe	27.21	17.19	16.20	0.38	10.42
NMK14	White Hart' crossing	21.93	14.78	15.83	0.26	10.23
NMK15	Newmarket - Park area	21.58	14.62	15.79	0.26	10.21
NMK19	Blackbear Lane, and High Street	23.18	15.36	15.86	0.27	10.24
NAQO		-	40	40	35	25

6.7.5 Presented in **Table 6.19** are the predicted change in concentrations of NO₂, PM₁₀ and PM_{2.5} and the change in the number of days where concentrations of PM₁₀ are greater than 50 µgm⁻³.

Table 6.19: Predicted change in air quality concentrations at sensitive receptors in 2029 “do something - detailed”

Receptor Number and Name		NO ₂	PM ₁₀		PM _{2.5}	
		Change in annual mean µgm ⁻³ (%)	Change in annual mean µgm ⁻³ (%)	Change in days >50 µgm ⁻³ (%)	Change in annual mean µgm ⁻³ (%)	
R1	4 Byerley Cl	0.24 (2.37)	0.12 (1.41)	0.03 (0.20)	0	(0.00)
R2	53 Bury Road	0.11 (0.72)	0.05 (0.44)	0.01 (0.07)	0	(0.00)
R3	Bell Inn PH	0.49 (2.97)	0.23 (1.96)	0.06 (0.32)	0.06	(2.60)
R4	Flint Cottages	0.24 (1.71)	0.12 (1.20)	0.03 (0.17)	0.02	(1.51)
R5	Lanwades House	0.45 (2.86)	0.21 (1.84)	0.05 (0.26)	0.05	(2.24)
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.35 (2.23)	0.16 (1.41)	0.04 (0.21)	0.03	(1.39)
NMK1	23 Old Station Road	0.11 (0.45)	0.05 (0.31)	0.01 (0.06)	0	(0.00)
NMK3	Taxi rank	0.09 (0.41)	0.04 (0.27)	0.01 (0.06)	0	(0.00)
NMK5	Market St 'EE'	0.08 (0.37)	0.03 (0.21)	0.01 (0.06)	0	(0.00)
NMK6	Clock tower, crossing	0.08 (0.37)	0.04 (0.27)	0.01 (0.06)	0	(0.00)

NMK7	Rutland Arms' crossing	0.08 (0.36)	0.04 (0.27)	0.01 (0.06)	0	(0.00)
NMK8	'Savers' lamppost	0.02 (0.14)	0.01 (0.09)	0 (0.00)	0	(0.00)
NMK9	Old Station Road, Nancy's Tearoom	0.08 (0.36)	0.04 (0.27)	0.01 (0.06)	0	(0.00)
NMK10	Old Station Road and Rous Road	0.08 (0.36)	0.04 (0.27)	0.01 (0.06)	0	(0.00)
NMK11	Café Nero' crossing	0.09 (0.39)	0.04 (0.26)	0.01 (0.06)	0	(0.00)
NMK12	KFC' downpipe	0.14 (0.52)	0.06 (0.35)	0.01 (0.06)	0	(0.00)
NMK14	White Hart' crossing	0.08 (0.37)	0.04 (0.27)	0.01 (0.06)	0	(0.00)
NMK15	Newmarket - Park area	0.08 (0.37)	0.04 (0.27)	0.01 (0.06)	0	(0.00)
NMK19	Blackbear Lane, and High Street	0.11 (0.48)	0.05 (0.33)	0.01 (0.06)	0	(0.00)

- 6.7.6 From **Table 6.19** changes in concentration of NO₂ are predicted to be 0.49 µgm⁻³ or less and changes in concentration of PM₁₀ are predicted to be 0.23 µgm⁻³ or less. It can also be seen that the change in the number of days where the concentration of PM₁₀ is predicted to be more than 50 µgm⁻³ will be 0.05 days or less. Changes in concentration of PM_{2.5} are predicted to be 0.06 µgm⁻³ or less.

Magnitude of Change – 2029 with Detailed development

- 6.7.7 Comparing the results in **Table 6.19** with the magnitude of change in **Table 6. 8** all the receptors are predicted to experience a change in annual mean NO₂ and PM₁₀ concentrations which is “Imperceptible” (<0.4 µgm⁻³).
- 6.7.8 It can also be seen that the receptors are predicted to experience an increase in annual mean concentrations of PM_{2.5} which is “Imperceptible” (<0.4 µgm⁻³) or “No Change”.
- 6.7.9 There is predicted to be an “Imperceptible” (<1 day) or “No Change” in the number of days where PM₁₀ levels are greater than 50 µgm⁻³.

“Significance” of Change – 2029 with Detailed development

- 6.7.10 The “Significance” of the predicted changes in NO₂, PM₁₀ and PM_{2.5} annual mean concentrations are presented in

6.7.11 Table 6.20, Table 6.21 and

6.7.12 Table 6.22.

Table 6.20: NO₂ – Significance of change in annual mean concentrations following the completion of the proposed development in 2029

Receptor Number and Name		NO ₂		
		Change in annual mean (µgm ⁻³)	Magnitude of change	“Significance” of change
R1	4 Byerley Cl	0.24	Imperceptible	Negligible
R2	53 Bury Road	0.11	Imperceptible	Negligible
R3	Bell Inn PH	0.49	Imperceptible	Negligible
R4	Flint Cottages	0.24	Imperceptible	Negligible
R5	Lanwades House	0.45	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.35	Imperceptible	Negligible
NMK1	23 Old Station Road	0.11	Imperceptible	Negligible
NMK3	Taxi rank	0.09	Imperceptible	Negligible
NMK5	Market St 'EE'	0.08	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.08	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.08	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.02	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.08	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.08	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.09	Imperceptible	Negligible
NMK12	KFC' downpipe	0.14	Imperceptible	Negligible
NMK14	White Hart' crossing	0.08	Imperceptible	Negligible
NMK15	Newmarket – Park area	0.08	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.11	Imperceptible	Negligible

6.7.13 With reference to the overall concentration of NO₂ presented in

6.7.14 **Table 6.17** being well below the NAQO level of 40 µgm⁻³ and the magnitude of change presented in **Table 6.27** being “Imperceptible” or “No Change” the “Significance” of change in NO₂ concentrations is considered “Negligible”.

Table 6.21: PM₁₀ – Significance of change in annual mean concentrations following the completion of the proposed development in 2029

Receptor Number and Name		PM ₁₀		
		Change in annual mean (µgm ⁻³)	Magnitude of Change	“Significance” of change
R1	4 Byerley Cl	0.12	Imperceptible	Negligible
R2	53 Bury Road	0.05	Imperceptible	Negligible
R3	Bell Inn PH	0.23	Imperceptible	Negligible
R4	Flint Cottages	0.12	Imperceptible	Negligible
R5	Lanwades House	0.21	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.16	Imperceptible	Negligible
NMK1	23 Old Station Road	0.05	Imperceptible	Negligible
NMK3	Taxi rank	0.04	Imperceptible	Negligible
NMK5	Market St 'EE'	0.03	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.04	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.04	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.01	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.04	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.04	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.04	Imperceptible	Negligible
NMK12	KFC' downpipe	0.06	Imperceptible	Negligible
NMK14	White Hart' crossing	0.04	Imperceptible	Negligible
NMK15	Newmarket – Park area	0.04	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.05	Imperceptible	Negligible

6.7.15 With reference to the overall concentrations of PM₁₀ presented in

6.7.16 **Table 6.17** being well below the objective level of 40 µgm⁻³ and the magnitude of change presented in **Table 6.28** being “Imperceptible” or “No Change”, the “Significance” of change in PM₁₀ concentration is considered to be “Negligible”.

Table 6.22: PM_{2.5} – Significance of change in annual mean concentrations following the completion of the proposed development in 2029

Receptor Number and Name		PM _{2.5}		
		Change in annual mean (μgm^{-3})	Magnitude of change	“Significance” of change
R1	4 Byerley Cl	0	No Change	No Change
R2	53 Bury Road	0	No Change	No Change
R3	Bell Inn PH	0.06	Imperceptible	Negligible
R4	Flint Cottages	0.02	Imperceptible	Negligible
R5	Lanwades House	0.05	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.03	Imperceptible	Negligible
NMK1	23 Old Station Road	0	No Change	No Change
NMK3	Taxi rank	0	No Change	No Change
NMK5	Market St 'EE'	0	No Change	No Change
NMK6	Clock tower, crossing	0	No Change	No Change
NMK7	Rutland Arms' crossing	0	No Change	No Change
NMK8	'Savers' lamppost	0	No Change	No Change
NMK9	Old Station Road, Nancy's Tearoom	0	No Change	No Change
NMK10	Old Station Road and Rous Road	0	No Change	No Change
NMK11	Café Nero' crossing	0	No Change	No Change
NMK12	KFC' downpipe	0	No Change	No Change
NMK14	White Hart' crossing	0	No Change	No Change
NMK15	Newmarket - Park area	0	No Change	No Change
NMK19	Blackbear Lane, and High Street	0	No Change	No Change

6.7.17 With reference to the overall concentration of PM_{2.5} presented in

6.7.18 **Table 6.17** being well below the NAQO level of 25 μgm^{-3} and the magnitude of change presented in

6.7.19 **Table 6.22** being “Imperceptible” or “No Change” the “Significance” of change in PM_{2.5} concentrations is considered “Negligible” or “No Change”.

6.7.20 Presented in

6.7.21 **Table 6.23** are the predicted changes in Nitrogen Oxide (NO_x) at the location of the ecological receptors which are within 200m of roads within the assessment area.

Table 6.23: Predicted Annual Average concentrations of NO_x at Ecological Receptor Locations 2029

Ecological Receptor		Predicted Annual Average NO _x Concentration (µgm ⁻³)				
		Do Nothing 2029	Do Something 2029	Process Contribution (PC)	PC as % of AQO	Background
E1	Breckland SPA	23.39	23.50	0.115	0.38	6.08
E2	Chippenham Fen	8.68	8.69	0.012	0.04	5.18
E3	Wicken Fen	9.06	9.06	0.003	0.01	5.51
Annual AQO/Critical (CL)	Mean Level	30				

6.7.22 With reference to

6.7.23 **Table 6.23**, the maximum change in annual exposure to NO_x due to development generated traffic is 0.115 µgm⁻³ at receptor E1 – Breckland SPA. The increase is less than 1% of the critical load and 0.115 µgm⁻³ is less than the 0.3 µgm⁻³ development contribution stated within the guidance of ‘A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites’, IAQM 2020.

6.7.24 Therefore, no further assessment is required and the impact at E1 Breckland SPA is considered to be negligible.

Effects – 2030

6.7.25 Sensitive receptors adjacent to the Site and where there is predicted to be an impact from the development have been assessed for the two scenarios, “do nothing” and “do something”. The results from the assessment are presented in

6.7.26 **Table 6.24** and **Table 6.25**.

Table 6.24: Predicted air quality concentrations at sensitive receptors in 2030 “do nothing”

Receptor Number and Name		NO _x	NO ₂	PM ₁₀		PM _{2.5}
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	9.84	8.35	14.69	0.12	9.66
R2	53 Bury Road	14.60	11.02	14.48	0.13	9.37
R3	Bell Inn PH	15.51	11.29	19.02	2.31	10.04
R4	Flint Cottages	13.22	9.67	17.91	1.33	10.10
R5	Lanwades House	14.86	10.97	18.94	2.23	10.00
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.90	10.99	18.87	2.16	9.96
NMK1	23 Old Station Road	23.52	15.51	16.19	0.38	10.42
NMK3	Taxi rank	21.07	14.38	15.90	0.28	10.27
NMK5	Market St 'EE'	20.31	14.03	15.79	0.26	10.21
NMK6	Clock tower, crossing	20.61	14.17	15.83	0.26	10.23
NMK7	Rutland Arms' crossing	20.77	14.24	15.85	0.27	10.24
NMK8	'Savers' lamppost	13.86	10.94	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	20.75	14.23	15.84	0.27	10.24
NMK10	Old Station Road and Rous Road	20.79	14.25	15.85	0.27	10.24
NMK11	Café Nero' crossing	21.73	14.69	15.96	0.30	10.30
NMK12	KFC' downpipe	25.23	16.30	16.20	0.38	10.42
NMK14	White Hart' crossing	20.59	14.16	15.83	0.26	10.23
NMK15	"Newmarket – Park area"	20.29	14.02	15.79	0.25	10.21
NMK19	Blackbear Lane, and High Street	22.10	14.86	15.90	0.28	10.27
NAQO		-	40	40	35	25

Table 6.25: Predicted air quality concentrations at sensitive receptors in 2030 “do something - detailed”

Receptor Number and Name		NO _x	NO ₂	PM ₁₀		PM _{2.5}
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	10.05	8.46	14.72	0.12	9.67
R2	53 Bury Road	14.70	11.07	14.49	0.13	9.37
R3	Bell Inn PH	15.91	11.48	19.08	2.37	10.07
R4	Flint Cottages	13.39	9.75	17.94	1.35	10.11
R5	Lanwades House	15.24	11.16	18.99	2.28	10.02
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	15.13	11.10	18.90	2.19	9.98
NMK1	23 Old Station Road	23.63	15.57	16.20	0.38	10.42
NMK3	Taxi rank	21.16	14.42	15.91	0.29	10.27
NMK5	Market St 'EE'	20.38	14.06	15.80	0.26	10.22
NMK6	Clock tower, crossing	20.68	14.20	15.84	0.27	10.23
NMK7	Rutland Arms' crossing	20.85	14.28	15.85	0.27	10.24
NMK8	'Savers' lamppost	13.88	10.95	15.05	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	20.83	14.27	15.85	0.27	10.24
NMK10	Old Station Road and Rous Road	20.86	14.28	15.86	0.27	10.25
NMK11	Café Nero' crossing	21.81	14.72	15.97	0.30	10.30
NMK12	KFC' downpipe	25.36	16.35	16.21	0.39	10.43
NMK14	White Hart' crossing	20.67	14.19	15.83	0.27	10.23
NMK15	"Newmarket – Park area"	20.35	14.05	15.80	0.26	10.22
NMK19	Blackbear Lane, and High Street	22.20	14.91	15.91	0.29	10.27
NAQO		-	40	40	35	25

6.7.27 Presented in **Table 6.26** are the predicted change in concentrations of NO₂, PM₁₀ and PM_{2.5} and the change in the number of days where concentrations of PM₁₀ are greater than 50 μgm^{-3} .

Table 6.26: Predicted change in air quality concentrations at sensitive receptors in 2030 “do something - detailed”

Receptor Number and Name		NO ₂	PM ₁₀					
		Change in annual mean μgm^{-3} (%)	Change in annual mean μgm^{-3} (%)	Change in days >50 μgm^{-3} (%)	Change in annual mean μgm^{-3} (%)			
R1	4 Byerley Cl	0.21 (2.13)	0.11 (1.32)	0.03 (0.20)	0		(0.00)	
R2	53 Bury Road	0.09 (0.62)	0.05 (0.45)	0.01 (0.07)	0		(0.00)	
R3	Bell Inn PH	0.40 (2.58)	0.19 (1.68)	0.05 (0.26)	0.05		(2.16)	
R4	Flint Cottages	0.17 (1.29)	0.08 (0.83)	0.02 (0.11)	0.02		(1.50)	
R5	Lanwades House	0.38 (2.56)	0.19 (1.73)	0.05 (0.26)	0.05		(2.24)	
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.23 (1.54)	0.11 (1.00)	0.03 (0.16)	0.03		(1.39)	
NMK1	23 Old Station Road	0.11 (0.47)	0.06 (0.39)	0.01 (0.06)	0		(0.00)	
NMK3	Taxi rank	0.09 (0.43)	0.04 (0.28)	0.01 (0.06)	0		(0.00)	
NMK5	Market St 'EE'	0.07 (0.34)	0.03 (0.21)	0.01 (0.06)	0		(0.00)	
NMK6	Clock tower, crossing	0.07 (0.34)	0.03 (0.21)	0.01 (0.06)	0		(0.00)	
NMK7	Rutland Arms' crossing	0.07 (0.34)	0.04 (0.28)	0.01 (0.06)	0		(0.00)	
NMK8	'Savers' lamppost	0.01 (0.07)	0.01 (0.09)	0 (0.00)	0		(0.00)	
NMK9	Old Station Road, Nancy's Tearoom	0.07 (0.34)	0.04 (0.28)	0.01 (0.06)	0		(0.00)	
NMK10	Old Station Road and Rous Road	0.07 (0.34)	0.03 (0.21)	0.01 (0.06)	0		(0.00)	
NMK11	Café Nero' crossing	0.08 (0.37)	0.03 (0.20)	0.01 (0.06)	0		(0.00)	
NMK12	KFC' downpipe	0.13 (0.52)	0.05 (0.31)	0.01 (0.06)	0		(0.00)	
NMK14	White Hart' crossing	0.07 (0.34)	0.03 (0.21)	0.01 (0.06)	0		(0.00)	
NMK15	"Newmarket – Park area"	0.07 (0.35)	0.03 (0.21)	0.01 (0.06)	0		(0.00)	
NMK19	Blackbear Lane, and High Street	0.11 (0.50)	0.05 (0.34)	0.01 (0.06)	0		(0.00)	

6.7.28 From **Table 6.26** changes in concentration of NO₂ are predicted to be 0.40 μgm^{-3} or less and changes in concentration of PM₁₀ are predicted to be 0.19 μgm^{-3} or less. It can also be seen that the change in the number of days where the concentration of PM₁₀ is predicted to be more than 50 μgm^{-3} will be 0.05 days or less. Changes in concentration of PM_{2.5} are predicted to be 0.05 μgm^{-3} or less.

Magnitude of Change – 2030 with Detailed development

6.7.29 Comparing the results in

- 6.7.30 **Table 6.24** with the magnitude of change in **Table 6. 8** all the receptors are predicted to experience a change in annual mean NO₂ and PM₁₀ concentrations which is “Imperceptible” (<0.4 µgm⁻³).
- 6.7.31 It can also be seen that the receptors are predicted to experience an increase in annual mean concentrations of PM_{2.5} which is “Imperceptible” (<0.4 µgm⁻³) or “No Change”.
- 6.7.32 There is predicted to be “Imperceptible” (<1 day) or “No Change” in the number of days where PM₁₀ levels are greater than 50 µgm⁻³.

“Significance” of Change – 2030 with Detailed development

- 6.7.33 The “Significance” of the predicted changes in NO₂, PM₁₀ and PM_{2.5} annual mean concentrations are presented in **Table 6.27**, **Table 6.28** and **Table 6.29**.

Table 6.27: NO₂ – Significance of change in annual mean concentrations following the completion of the proposed development in 2030

Receptor Number and Name		NO ₂		
		Change in annual mean (µgm ⁻³)	Magnitude of change	“Significance” of change
R1	4 Byerley Cl	0.21	Imperceptible	Negligible
R2	53 Bury Road	0.09	Imperceptible	Negligible
R3	Bell Inn PH	0.4	Imperceptible	Negligible
R4	Flint Cottages	0.17	Imperceptible	Negligible
R5	Lanwades House	0.38	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.23	Imperceptible	Negligible
NMK1	23 Old Station Road	0.11	Imperceptible	Negligible
NMK3	Taxi rank	0.09	Imperceptible	Negligible
NMK5	Market St 'EE'	0.07	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.07	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.07	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.01	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.07	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.07	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.08	Imperceptible	Negligible
NMK12	KFC' downpipe	0.13	Imperceptible	Negligible
NMK14	White Hart' crossing	0.07	Imperceptible	Negligible

NMK15	Newmarket - Parkarea	0.07	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.11	Imperceptible	Negligible

6.7.34 With reference to the overall concentration of NO₂ presented in

6.7.35 **Table 6.24** being well below the NAQO level of $40 \mu\text{gm}^{-3}$ and the magnitude of change presented in **Table 6.27** being “Imperceptible” the “Significance” of change in NO_2 concentrations is considered “Negligible”.

Table 6.28: PM_{10} – Significance of change in annual mean concentrations following the completion of the proposed development in 2030

Receptor Number and Name		PM_{10}		
		Change in annual mean (μgm^{-3})	Magnitude of Change	“Significance” of change
R1	4 Byerley Cl	0.11	Imperceptible	Negligible
R2	53 Bury Road	0.05	Imperceptible	Negligible
R3	Bell Inn PH	0.19	Imperceptible	Negligible
R4	Flint Cottages	0.08	Imperceptible	Negligible
R5	Lanwades House	0.19	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.11	Imperceptible	Negligible
NMK1	23 Old Station Road	0.06	Imperceptible	Negligible
NMK3	Taxi rank	0.04	Imperceptible	Negligible
NMK5	Market St 'EE'	0.03	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.03	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.04	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.01	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.04	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.03	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.03	Imperceptible	Negligible
NMK12	KFC' downpipe	0.05	Imperceptible	Negligible
NMK14	White Hart' crossing	0.03	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.03	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.05	Imperceptible	Negligible

6.7.36 With reference to the overall concentrations of PM_{10} presented in

6.7.37 **Table 6.24** being well below the objective level of $40 \mu\text{g m}^{-3}$ and the magnitude of change presented in **Table 6.28** being “Imperceptible”, the “Significance” of change in PM_{10} concentration is considered to be “Negligible”.

Table 6.29: $\text{PM}_{2.5}$ – Significance of change in annual mean concentrations following the completion of the proposed development in 2030

Receptor Number and Name		$\text{PM}_{2.5}$		
		Change in annual mean ($\mu\text{g m}^{-3}$)	Magnitude of change	“Significance” of change
R1	4 Byerley Cl	0	No Change	No Change
R2	53 Bury Road	0	No Change	No Change
R3	Bell Inn PH	0.05	Imperceptible	Negligible
R4	Flint Cottages	0.02	Imperceptible	Negligible
R5	Lanwades House	0.05	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.03	Imperceptible	Negligible
NMK1	23 Old Station Road	0	No Change	No Change
NMK3	Taxi rank	0	No Change	No Change
NMK5	Market St 'EE'	0	No Change	No Change
NMK6	Clock tower, crossing	0	No Change	No Change
NMK7	Rutland Arms' crossing	0	No Change	No Change
NMK8	'Savers' lamppost	0	No Change	No Change
NMK9	Old Station Road, Nancy's Tearoom	0	No Change	No Change
NMK10	Old Station Road and Rous Road	0	No Change	No Change
NMK11	Café Nero' crossing	0	No Change	No Change
NMK12	KFC' downpipe	0	No Change	No Change
NMK14	White Hart' crossing	0	No Change	No Change
NMK15	Newmarket - Parkarea	0	No Change	No Change
NMK19	Blackbear Lane, and High Street	0	No Change	No Change

6.7.38 With reference to the overall concentration of $\text{PM}_{2.5}$ presented in

6.7.39 **Table 6.24** being well below the NAQO level of $25 \mu\text{gm}^{-3}$ and the magnitude of change presented in **Table 6.29** being “Imperceptible” or “No Change” the “Significance” of change in $\text{PM}_{2.5}$ concentrations is considered “Negligible” or “No Change”.

6.7.40 Presented in

6.7.41 **Table 6.30** are the predicted changes in Nitrogen Oxide (NO_x) at the location of the ecological receptors which are within 200m of roads within the assessment area.

Table 6.30: Predicted Annual Average concentrations of NO_x at Ecological Receptor Locations 2030

Ecological Receptor		Predicted Annual Average NO_x Concentration (μgm^{-3})				
		Do Nothing 2030	Do Something 2030	Process Contribution (PC)	PC as % of AQO	Background
E1	Breckland SPA	21.78	21.88	0.10	0.33	5.77
E2	Chippenham Fen	8.59	8.60	0.01	0.04	4.97
E3	Wicken Fen	9.01	9.01	0.003	0.01	5.31
Annual AQO/Critical (CL)	Mean Level	30				

6.7.42 With reference to

6.7.43 **Table 6.30**, the maximum change in annual exposure to NO_x due to development generated traffic is $0.10 \mu\text{gm}^{-3}$ at receptor E1 – Breckland SPA. The increase is less than 1% of the critical load and $0.10 \mu\text{gm}^{-3}$ is less than the $0.3 \mu\text{gm}^{-3}$ development contribution stated within the guidance of ‘A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites’, IAQM 2020.

6.7.44 Therefore, no further assessment is required and the impact at E1 Breckland SPA is considered to be negligible.

Effects – 2031

6.7.45 Sensitive receptors adjacent to the Site and where there is predicted to be an impact from the development have been assessed for the two scenarios, “do nothing” and “do something”. The results from the assessment are presented in **Table 6.31** and **Table 6.32**.

Table 6.31: Predicted air quality concentrations at sensitive receptors in 2031 “do nothing”

Receptor Number and Name		NO _x	NO ₂	PM ₁₀		PM _{2.5}
		Annual mean µgm ⁻³	Annual mean µgm ⁻³	Annual mean µgm ⁻³	Days >50 µgm ⁻³	Annual mean µgm ⁻³
R1	4 Byerley Cl	9.61	8.24	14.69	0.12	9.66
R2	53 Bury Road	14.01	10.73	14.48	0.13	9.37
R3	Bell Inn PH	14.64	10.86	19.02	2.31	10.04
R4	Flint Cottages	12.52	9.32	17.91	1.33	10.10
R5	Lanwades House	14.08	10.59	18.94	2.23	10.00
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.13	10.61	18.87	2.16	9.96
NMK1	23 Old Station Road	22.05	14.83	16.20	0.38	10.42
NMK3	Taxi rank	19.92	13.84	15.90	0.29	10.27
NMK5	Market St 'EE'	19.23	13.51	15.80	0.26	10.21
NMK6	Clock tower, crossing	19.49	13.63	15.83	0.27	10.23
NMK7	Rutland Arms' crossing	19.63	13.70	15.85	0.27	10.24
NMK8	'Savers' lamppost	13.64	10.83	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	19.61	13.69	15.84	0.27	10.24
NMK10	Old Station Road and Rous Road	19.64	13.70	15.85	0.27	10.24
NMK11	Café Nero' crossing	20.46	14.09	15.96	0.30	10.30
NMK12	KFC' downpipe	23.51	15.50	16.20	0.38	10.42
NMK14	White Hart' crossing	19.48	13.63	15.83	0.26	10.23
NMK15	"Newmarket – Park area"	19.21	13.50	15.79	0.26	10.21
NMK19	Blackbear Lane, and High Street	20.83	14.26	15.91	0.29	10.27
NAQO		-	40	40	35	25

Table 6.32: Predicted air quality concentrations at sensitive receptors in 2031 “do something - detailed”

Receptor Number and Name		NO _x	NO ₂	PM ₁₀		PM _{2.5}
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	9.79	8.32	14.72	0.12	9.67
R2	53 Bury Road	14.10	10.78	14.49	0.13	9.37
R3	Bell Inn PH	14.99	11.03	19.08	2.37	10.07
R4	Flint Cottages	12.67	9.39	17.94	1.35	10.11
R5	Lanwades House	14.42	10.76	19.00	2.28	10.03
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.33	10.71	18.90	2.19	9.98
NMK1	23 Old Station Road	22.13	14.87	16.21	0.38	10.43
NMK3	Taxi rank	19.99	13.87	15.91	0.29	10.27
NMK5	Market St 'EE'	19.34	13.56	15.81	0.26	10.22
NMK6	Clock tower, crossing	19.61	13.69	15.84	0.27	10.24
NMK7	Rutland Arms' crossing	19.75	13.76	15.86	0.27	10.25
NMK8	'Savers' lamppost	13.66	10.84	15.05	0.13	9.83
NMK9	Old Station Road, Nancy's Tearoom	19.73	13.75	15.86	0.27	10.25
NMK10	Old Station Road and Rous Road	19.76	13.76	15.86	0.27	10.25
NMK11	Café Nero' crossing	20.59	14.15	15.97	0.31	10.31
NMK12	KFC' downpipe	23.71	15.59	16.22	0.39	10.43
NMK14	White Hart' crossing	19.59	13.68	15.84	0.27	10.24
NMK15	"Newmarket – Park area"	19.32	13.55	15.80	0.26	10.22
NMK19	Blackbear Lane, and High Street	20.92	14.30	15.92	0.29	10.28
NAQO		-	40	40	35	25

6.7.46 Presented in **Table 6.33** are the predicted change in concentrations of NO₂, PM₁₀ and PM_{2.5} and the change in the number of days where concentrations of PM₁₀ are greater than 50 μgm^{-3} .

Table 6.33: Predicted change in air quality concentrations at sensitive receptors in 2031 “do something - detailed”

Receptor Number and Name		NO ₂	PM ₁₀					
		Change in annual mean μgm^{-3} (%)	Change in annual mean μgm^{-3} (%)	Change in days μgm^{-3} (%)	Change in days >50 μgm^{-3} (%)	Change in annual mean μgm^{-3} (%)	Change in annual mean μgm^{-3} (%)	Change in annual mean μgm^{-3} (%)
R1	4 Byerley Cl	0.18 (1.87)	0.08 (0.97)	0.03 (0.20)	0	0	0	(0.00)
R2	53 Bury Road	0.09 (0.64)	0.05 (0.47)	0.01 (0.07)	0	0	0	(0.00)
R3	Bell Inn PH	0.35 (2.39)	0.17 (1.57)	0.05 (0.26)	0.06	0.06	0.06	(2.59)
R4	Flint Cottages	0.15 (1.20)	0.07 (0.75)	0.02 (0.11)	0.02	0.02	0.02	(1.50)
R5	Lanwades House	0.34 (2.41)	0.17 (1.61)	0.05 (0.26)	0.05	0.05	0.05	(2.24)
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.2 (1.42)	0.1 (0.94)	0.03 (0.16)	0.03	0.03	0.03	(1.39)
NMK1	23 Old Station Road	0.08 (0.36)	0.04 (0.27)	0.01 (0.06)	0	0	0	(0.00)
NMK3	Taxi rank	0.07 (0.35)	0.03 (0.22)	0.01 (0.06)	0	0	0	(0.00)
NMK5	Market St 'EE'	0.11 (0.57)	0.05 (0.37)	0.01 (0.06)	0	0	0	(0.00)
NMK6	Clock tower, crossing	0.12 (0.62)	0.06 (0.44)	0.01 (0.06)	0	0	0	(0.00)
NMK7	Rutland Arms' crossing	0.12 (0.61)	0.06 (0.44)	0.01 (0.06)	0	0	0	(0.00)
NMK8	'Savers' lamppost	0.02 (0.15)	0.01 (0.09)	0 (0.00)	0	0	0	(0.00)
NMK9	Old Station Road, Nancy's Tearoom	0.12 (0.61)	0.06 (0.44)	0.01 (0.06)	0	0	0	(0.00)
NMK10	Old Station Road and Rous Road	0.12 (0.61)	0.06 (0.44)	0.01 (0.06)	0	0	0	(0.00)
NMK11	Café Nero' crossing	0.13 (0.64)	0.06 (0.43)	0.01 (0.06)	0	0	0	(0.00)
NMK12	KFC' downpipe	0.2 (0.85)	0.09 (0.58)	0.02 (0.12)	0.01	0.01	0.01	(2.62)
NMK14	White Hart' crossing	0.12 (0.62)	0.05 (0.37)	0.01 (0.06)	0	0	0	(0.00)
NMK15	"Newmarket – Park area"	0.11 (0.57)	0.05 (0.37)	0.01 (0.06)	0	0	0	(0.00)
NMK19	Blackbear Lane, and High Street	0.08 (0.38)	0.04 (0.28)	0.01 (0.06)	0	0	0	(0.00)

6.7.47 From **Table 6.33** changes in concentration of NO₂ are predicted to be 0.35 μgm^{-3} or less and changes in concentration of PM₁₀ are predicted to be 0.17 μgm^{-3} or less. It can also be seen that the change in the

number of days where the concentration of PM₁₀ is predicted to be more than 50 µgm⁻³ will be 0.05 days or less. Changes in concentration of PM_{2.5} are predicted to be 0.06 µgm⁻³ or less.

Magnitude of Change – 2031 with Detailed development

- 6.7.48 Comparing the results in **Table 6.31** with the magnitude of change in **Table 6. 8** all the receptors are predicted to experience a change in annual mean NO₂ and PM₁₀ concentrations which is “Imperceptible” (<0.4 µgm⁻³).
- 6.7.49 It can also be seen that the receptors are predicted to experience an increase in annual mean PM_{2.5} concentrations which is “Imperceptible” (<0.4 µgm⁻³) or “No Change”.
- 6.7.50 There is predicted to be “Imperceptible” (<1 day) or “No Change” in the number of days where PM₁₀ levels are greater than 50 µgm⁻³.

“Significance” of Change – 2031 with Detailed development

- 6.7.51 The “Significance” of the predicted changes in NO₂, PM₁₀ and PM_{2.5} annual mean concentrations are presented in **Table 6.34**, **Table 6.35** and **Table 6.36**.

Table 6.34: NO₂ – Significance of change in annual mean concentrations following the completion of the proposed development in 2031

Receptor Number and Name		NO ₂		
		Change in annual mean (µgm ⁻³)	Magnitude of change	“Significance” of change
R1	4 Byerley Cl	0.18	Imperceptible	Negligible
R2	53 Bury Road	0.09	Imperceptible	Negligible
R3	Bell Inn PH	0.35	Imperceptible	Negligible
R4	Flint Cottages	0.15	Imperceptible	Negligible
R5	Lanwades House	0.34	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.2	Imperceptible	Negligible
NMK1	23 Old Station Road	0.08	Imperceptible	Negligible
NMK3	Taxi rank	0.07	Imperceptible	Negligible
NMK5	Market St 'EE'	0.11	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.12	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.12	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.02	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.12	Imperceptible	Negligible

NMK10	Old Station Road and Rous Road	0.12	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.13	Imperceptible	Negligible
NMK12	KFC' downpipe	0.2	Imperceptible	Negligible
NMK14	White Hart' crossing	0.12	Imperceptible	Negligible
NMK15	Newmarket – Park area	0.11	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.08	Imperceptible	Negligible

6.7.52 With reference to the overall concentration of NO₂ presented in **Table 6.31** being well below the NAQO level of 40 µgm⁻³ and the magnitude of change presented in **Table 6.34** being “Imperceptible” the “Significance” of change in NO₂ concentrations is considered “Negligible”.

Table 6.35: PM₁₀ – Significance of change in annual mean concentrations following the completion of the proposed development in 2031

Receptor Number and Name		PM ₁₀		
		Change in annual mean (µgm ⁻³)	Magnitude of Change	“Significance” of change
R1	4 Byerley Cl	0.08	Imperceptible	Negligible
R2	53 Bury Road	0.05	Imperceptible	Negligible
R3	Bell Inn PH	0.17	Imperceptible	Negligible
R4	Flint Cottages	0.07	Imperceptible	Negligible
R5	Lanwades House	0.17	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.1	Imperceptible	Negligible
NMK1	23 Old Station Road	0.04	Imperceptible	Negligible
NMK3	Taxi rank	0.03	Imperceptible	Negligible
NMK5	Market St 'EE'	0.05	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.06	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.06	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.01	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.06	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.06	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.06	Imperceptible	Negligible

NMK12	KFC' downpipe	0.09	Imperceptible	Negligible
NMK14	White Hart' crossing	0.05	Imperceptible	Negligible
NMK15	Newmarket – Park area	0.05	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.04	Imperceptible	Negligible

- 6.7.53 With reference to the overall concentrations of PM₁₀ presented in **Table 6.31** being well below the objective level of 40 µgm⁻³ and the magnitude of change presented in **Table 6.35** being “Imperceptible”, the “Significance” of change in PM₁₀ concentration is considered to be “Negligible”.

Table 6.36: PM_{2.5} – Significance of change in annual mean concentrations following the completion of the proposed development in 2031

Receptor Number and Name		PM _{2.5}		
		Change in annual mean (µgm ⁻³)	Magnitude of change	“Significance” of change
R1	4 Byerley Cl	0	No Change	No Change
R2	53 Bury Road	0	No Change	No Change
R3	Bell Inn PH	0.06	Imperceptible	Negligible
R4	Flint Cottages	0.02	Imperceptible	Negligible
R5	Lanwades House	0.05	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.03	Imperceptible	Negligible
NMK1	23 Old Station Road	0	No Change	No Change
NMK3	Taxi rank	0	No Change	No Change
NMK5	Market St 'EE'	0	No Change	No Change
NMK6	Clock tower, crossing	0	No Change	No Change
NMK7	Rutland Arms' crossing	0	No Change	No Change
NMK8	'Savers' lamppost	0	No Change	No Change
NMK9	Old Station Road, Nancy's Tearoom	0	No Change	No Change
NMK10	Old Station Road and Rous Road	0	No Change	No Change
NMK11	Café Nero' crossing	0	No Change	No Change
NMK12	KFC' downpipe	0.01	Imperceptible	Negligible
NMK14	White Hart' crossing	0	No Change	No Change
NMK15	Newmarket – Park area	0	No Change	No Change

NMK19	Blackbear Lane, and High Street	0	No Change	No Change
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6.7.54 With reference to the overall concentration of PM_{2.5} presented in **Table 6.31** being well below the NAQO level of 25 µgm⁻³ and the magnitude of change presented in **Table 6.36** being “Imperceptible” or “No Change” the “Significance” of change in PM_{2.5} concentrations is considered “Negligible” or “No Change”.

6.7.55 Presented in

6.7.56 **Table 6.37** are the predicted changes in Nitrogen Oxide (NO_x) at the location of the ecological receptors which are within 200m of roads within the assessment area.

Table 6.37: Predicted Annual Average concentrations of NO_x at Ecological Receptor Locations 2031

Ecological Receptor		Predicted Annual Average NO _x Concentration (µgm ⁻³)				
		Do Nothing 2031	Do Something 2031	Process Contribution (PC)	PC as % of AQO	Background
E1	Breckland SPA	20.42	20.51	0.09	0.28	5.56
E2	Chippenham Fen	8.52	8.52	0.01	0.03	4.81
E3	Wicken Fen	8.97	8.97	0.002	0.01	5.16
Annual AQO/Critical Level (CL)		30				

6.7.57 With reference to

6.7.58 **Table 6.37**, the maximum change in annual exposure to NO_x due to development generated traffic is 0.09 µgm⁻³ at receptor E1 – Breckland SPA. The increase is less than 1% of the critical load and 0.09 µgm⁻³ is less than the 0.3 µgm⁻³ development contribution stated within the guidance of ‘A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites’, IAQM 2020.

6.7.59 Therefore, no further assessment is required and the impact at E1 Breckland SPA as this is considered to be negligible.

Mitigation

6.7.60 Taking into the account predicted “Negligible” increases in NO₂, PM₁₀ and PM_{2.5} concentrations at sensitive receptors due to the development generated traffic following the completion of the development, and the fact that concentrations of NO₂ and PM₁₀ are predicted to be below the NAQO level of 40 µgm⁻³, no additional mitigation is proposed.

- 6.7.61 Within the development site, concentrations of NO₂, PM₁₀ and PM_{2.5} are predicted to be well below the NAQO level of 40 µgm⁻³ and 25 µgm⁻³. Therefore, there are no proposals to mitigate air quality within the site.

Residual Effects

- 6.7.62 It has also been demonstrated that the air quality effects of altered traffic flows resulting from the Proposed Development on the local highway network at any sensitive receptors will be “Imperceptible Adverse”.
- 6.7.63 The sensitivity of receptors is “high” and the magnitude of change, following mitigation is “Imperceptible Adverse”. Therefore, there is likely to be a direct residual effect of Negligible and Not Significant.

Hybrid Application (Eastern Parcel and Western Parcel)

- 6.7.64 Worst-case flows arising from the Hybrid Application development generated traffic has then been added to the 2029, 2030 and 2031 traffic flows and the results are presented in Appendix 6.1.
- 6.7.65 Road traffic flows are predicted to change by between 0% and 231% due to Hybrid Application development generated traffic in 2029, 2030 and 2031 (greatest change is predicted to be on Sire Lane which is in the development boundary).

Effects – 2029

- 6.7.66 Sensitive receptors adjacent to the Site and where there is predicted to be an impact from the development have been assessed for the two scenarios, “do nothing” and “do something”. The results from the assessment are presented in **Table 6.38** and **Table 6.39**.

Table 6.38: Predicted air quality concentrations at sensitive receptors in 2029 “do nothing”

Receptor Number and Name		NO _x	NO ₂	PM ₁₀		PM _{2.5}
		Annual mean µgm ⁻³	Annual mean µgm ⁻³	Annual mean µgm ⁻³	Days >50 µgm ⁻³	Annual mean µgm ⁻³
R1	4 Byerley Cl	9.61	8.24	14.69	0.12	9.66
R2	53 Bury Road	14.01	10.73	14.48	0.13	9.37
R3	Bell Inn PH	14.64	10.86	19.02	2.31	10.04
R4	Flint Cottages	12.52	9.32	17.91	1.33	10.10
R5	Lanwades House	14.08	10.59	18.94	2.23	10.00
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.13	10.61	18.87	2.16	9.96
NMK1	23 Old Station Road	22.05	14.83	16.20	0.38	10.42
NMK3	Taxi rank	19.92	13.84	15.90	0.29	10.27

NMK5	Market St 'EE'	19.23	13.51	15.80	0.26	10.21
NMK6	Clock tower, crossing	19.49	13.63	15.83	0.27	10.23
NMK7	Rutland Arms' crossing	19.63	13.70	15.85	0.27	10.24
NMK8	'Savers' lamppost	13.64	10.83	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	19.61	13.69	15.84	0.27	10.24
NMK10	Old Station Road and Rous Road	19.64	13.70	15.85	0.27	10.24
NMK11	Café Nero' crossing	20.46	14.09	15.96	0.30	10.30
NMK12	KFC' downpipe	23.51	15.50	16.20	0.38	10.42
NMK14	White Hart' crossing	19.48	13.63	15.83	0.26	10.23
NMK15	"Newmarket – Park area"	19.21	13.50	15.79	0.26	10.21
NMK19	Blackbear Lane, and High Street	20.83	14.26	15.91	0.29	10.27
NAQO		-	40	40	35	25

Table 6.39: Predicted air quality concentrations at sensitive receptors in 2029 “do something - hybrid”

Receptor Number and Name		NO _x	NO ₂	PM ₁₀		PM _{2.5}
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	10.05	8.45	14.76	0.12	9.70
R2	53 Bury Road	14.27	10.86	14.50	0.13	9.38
R3	Bell Inn PH	15.64	11.34	19.18	2.47	10.12
R4	Flint Cottages	12.95	9.53	17.98	1.39	10.14
R5	Lanwades House	15.04	11.05	19.09	2.38	10.08
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.71	10.89	18.96	2.25	10.01
NMK1	23 Old Station Road	22.22	14.91	16.22	0.39	10.43
NMK3	Taxi rank	20.06	13.90	15.92	0.29	10.28
NMK5	Market St 'EE'	19.40	13.59	15.82	0.26	10.22
NMK6	Clock tower, crossing	19.67	13.72	15.85	0.27	10.24
NMK7	Rutland Arms' crossing	19.82	13.79	15.87	0.28	10.25
NMK8	'Savers' lamppost	13.67	10.85	15.05	0.13	9.83
NMK9	Old Station Road, Nancy's Tearoom	19.80	13.78	15.87	0.27	10.25

NMK10	Old Station Road and Rous Road	19.82	13.79	15.87	0.28	10.25
NMK11	Café Nero' crossing	20.66	14.18	15.98	0.31	10.31
NMK12	KFC' downpipe	23.84	15.65	16.24	0.39	10.44
NMK14	White Hart' crossing	19.66	13.71	15.85	0.27	10.24
NMK15	"Newmarket – Park area"	19.38	13.58	15.81	0.26	10.22
NMK19	Blackbear Lane, and High Street	21.01	14.35	15.93	0.29	10.28
NAQO		-	40	40	35	25

6.7.67 Presented in **Table 6.40** are the predicted change in concentrations of NO₂, PM₁₀ and PM_{2.5} and the change in the number of days where concentrations of PM₁₀ are greater than 50 µg m⁻³.

Table 6.40: Predicted change in air quality concentrations at sensitive receptors in 2029 “do something - hybrid”

Receptor Number and Name		NO ₂	PM ₁₀			
		Change in annual mean µg m ⁻³ (%)	Change in annual mean µg m ⁻³ (%)	Change in days >50 µg m ⁻³ (%)	Change in annual mean µg m ⁻³ (%)	
R1	4 Byerley Cl	0.59 (5.83)	0.29 (3.42)	0.06 (0.41)	0	(0.00)
R2	53 Bury Road	0.33 (2.16)	0.16 (1.41)	0.02 (0.14)	0	(0.00)
R3	Bell Inn PH	1.38 (8.38)	0.66 (5.62)	0.16 (0.84)	0.16	(6.94)
R4	Flint Cottages	0.63 (4.50)	0.31 (3.09)	0.08 (0.45)	0.06	(4.52)
R5	Lanwades House	1.29 (8.19)	0.61 (5.35)	0.15 (0.79)	0.15	(6.73)
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.87 (5.54)	0.41 (3.60)	0.09 (0.48)	0.09	(4.18)
NMK1	23 Old Station Road	0.24 (0.98)	0.11 (0.69)	0.02 (0.12)	0.01	(2.87)
NMK3	Taxi rank	0.19 (0.87)	0.09 (0.61)	0.02 (0.13)	0.01	(3.75)
NMK5	Market St 'EE'	0.16 (0.74)	0.07 (0.48)	0.02 (0.13)	0	(0.00)
NMK6	Clock tower, crossing	0.17 (0.78)	0.08 (0.54)	0.02 (0.13)	0	(0.00)
NMK7	Rutland Arms' crossing	0.17 (0.77)	0.08 (0.54)	0.02 (0.13)	0	(0.00)
NMK8	'Savers' lamppost	0.04 (0.28)	0.02 (0.18)	0 (0.00)	0	(0.00)
NMK9	Old Station Road, Nancy's Tearoom	0.17 (0.77)	0.08 (0.54)	0.02 (0.13)	0	(0.00)
NMK10	Old Station Road and Rous Road	0.17 (0.77)	0.08 (0.54)	0.02 (0.13)	0	(0.00)

NMK11	Café Nero' crossing	0.19	(0.82)	0.09	(0.59)	0.02	(0.13)	0.01	(3.33)
NMK12	KFC' downpipe	0.31	(1.14)	0.14	(0.82)	0.03	(0.19)	0.01	(2.67)
NMK14	White Hart' crossing	0.17	(0.78)	0.08	(0.54)	0.02	(0.13)	0	(0.00)
NMK15	"Newmarket – Park area"	0.16	(0.74)	0.08	(0.55)	0.02	(0.13)	0	(0.00)
NMK19	Blackbear Lane, and High Street	0.24	(1.04)	0.11	(0.72)	0.02	(0.13)	0.01	(3.71)

6.7.68 From **Table 6.40** changes in concentration of NO₂ are predicted to be 1.38 µgm⁻³ or less and changes in concentration of PM₁₀ are predicted to be 0.66 µgm⁻³ or less. It can also be seen that the change in the number of days where the concentration of PM₁₀ is predicted to be more than 50 µgm⁻³ will be 0.16 days or less. Changes in concentration of PM_{2.5} are predicted to be 0.16 µgm⁻³ or less.

Magnitude of Change – 2029 with Hybrid Application

6.7.69 Comparing the results in **Table 6.40** with the magnitude of change in **Table 6. 8** all the receptors are predicted to experience a change in annual mean NO₂ and PM₁₀ concentrations which is "Small" (0.4 – 2 µgm⁻³) or "Imperceptible" (<0.4 µgm⁻³).

6.7.70 It can also be seen that the receptors are predicted to experience an increase in annual mean PM_{2.5} concentrations which is "Imperceptible" (<0.4 µgm⁻³) or "No Change".

6.7.71 There is predicted to be "Imperceptible" (<1 day) or "No Change" in the number of days where PM₁₀ levels are greater than 50 µgm⁻³.

"Significance" of Change – 2029 with Hybrid Application

6.7.72 The "Significance" of the predicted changes in NO₂, PM₁₀ and PM_{2.5} annual mean concentrations are presented in **Table 6.41**, **Table 6.41** and **Table 6.43**.

Table 6.41: NO₂ – Significance of change in annual mean concentrations following the completion of the proposed development in 2029

Receptor Number and Name		NO ₂		
		Change in annual mean (µgm ⁻³)	Magnitude of change	“Significance” of change
R1	4 Byerley Cl	0.59	Small	Negligible
R2	53 Bury Road	0.33	Imperceptible	Negligible
R3	Bell Inn PH	1.38	Small	Negligible
R4	Flint Cottages	0.63	Small	Negligible
R5	Lanwades House	1.29	Small	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.87	Small	Negligible
NMK1	23 Old Station Road	0.24	Imperceptible	Negligible
NMK3	Taxi rank	0.19	Imperceptible	Negligible
NMK5	Market St 'EE'	0.16	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.17	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.17	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.04	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.17	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.17	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.19	Imperceptible	Negligible
NMK12	KFC' downpipe	0.31	Imperceptible	Negligible
NMK14	White Hart' crossing	0.17	Imperceptible	Negligible
NMK15	Newmarket – Park area	0.16	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.24	Imperceptible	Negligible

6.7.73 With reference to the overall concentration of NO₂ presented in **Table 6.38** being well below the NAQO level of 40 µgm⁻³ and the magnitude of change presented in **Table 6.41** being “Small” or “Imperceptible” the “Significance” of change in NO₂ concentrations is considered “Negligible”.

Table 6.42: PM₁₀ – Significance of change in annual mean concentrations following the completion of the proposed development in 2029

Receptor Number and Name		PM ₁₀		
		Change in annual mean (µgm ⁻³)	Magnitude of Change	“Significance” of change
R1	4 Byerley Cl	0.29	Imperceptible	Negligible
R2	53 Bury Road	0.16	Imperceptible	Negligible
R3	Bell Inn PH	0.66	Small	Negligible
R4	Flint Cottages	0.31	Imperceptible	Negligible
R5	Lanwades House	0.61	Small	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.41	Imperceptible	Negligible
NMK1	23 Old Station Road	0.11	Imperceptible	Negligible
NMK3	Taxi rank	0.09	Imperceptible	Negligible
NMK5	Market St 'EE'	0.07	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.08	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.08	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.02	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.08	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.08	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.09	Imperceptible	Negligible
NMK12	KFC' downpipe	0.14	Imperceptible	Negligible
NMK14	White Hart' crossing	0.08	Imperceptible	Negligible
NMK15	Newmarket – Park area	0.08	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.11	Imperceptible	Negligible

6.7.74 With reference to the overall concentrations of PM₁₀ presented in **Table 6.38** being well below the objective level of 40 µgm⁻³ and the magnitude of change presented in **Table 6.42** being “Small” or “Imperceptible”, the “Significance” of change in PM₁₀ concentration is considered to be “Negligible”.

Table 6.43: PM_{2.5} – Significance of change in annual mean concentrations following the completion of the proposed development in 2029

Receptor Number and Name		PM _{2.5}		
		Change in annual mean (μgm^{-3})	Magnitude of change	“Significance” of change
R1	4 Byerley Cl	0	No Change	No Change
R2	53 Bury Road	0	No Change	No Change
R3	Bell Inn PH	0.16	Imperceptible	Negligible
R4	Flint Cottages	0.06	Imperceptible	Negligible
R5	Lanwades House	0.15	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.09	Imperceptible	Negligible
NMK1	23 Old Station Road	0.01	Imperceptible	Negligible
NMK3	Taxi rank	0.01	Imperceptible	Negligible
NMK5	Market St 'EE'	0	No Change	No Change
NMK6	Clock tower, crossing	0	No Change	No Change
NMK7	Rutland Arms' crossing	0	No Change	No Change
NMK8	'Savers' lamppost	0	No Change	No Change
NMK9	Old Station Road, Nancy's Tearoom	0	No Change	No Change
NMK10	Old Station Road and Rous Road	0	No Change	No Change
NMK11	Café Nero' crossing	0.01	Imperceptible	Negligible
NMK12	KFC' downpipe	0.01	Imperceptible	Negligible
NMK14	White Hart' crossing	0	No Change	No Change
NMK15	Newmarket – Park area	0	No Change	No Change
NMK19	Blackbear Lane, and High Street	0.01	Imperceptible	Negligible

- 6.7.75 With reference to the overall concentration of PM_{2.5} presented in **Table 6.38** being well below the NAQO level of 25 μgm^{-3} and the magnitude of change presented in **Table 6.43** being “Imperceptible” or “No Change” the “Significance” of change in PM_{2.5} concentrations is considered “Negligible” or “No Change”.
- 6.7.76 Presented in **Table 6.44** are the predicted changes in Nitrogen Oxide (NO_x) at the location of the ecological receptors which are within 200m of roads within the assessment area.

Table 6.44: Predicted Annual Average concentrations of NO_x at Ecological Receptor Locations 2029

Ecological Receptor		Predicted Annual Average NO _x Concentration (µgm ⁻³)				
		Do Nothing 2029	Do Something 2029	Process Contribution (PC)	PC as % of AQO	Background
E1	Breckland SPA	23.39	23.50	0.12	0.38	6.08
E2	Chippenham Fen	8.68	8.69	0.01	0.04	5.18
E3	Wicken Fen	9.06	9.06	0.00	0.01	5.51
Annual AQO/Critical (CL)	Mean Level	30				

6.7.77 With reference to **Table 6.44**, the maximum change in annual exposure to NO_x due to development generated traffic is 0.12 µgm⁻³ at receptor E1 – Breckland SPA. The increase is more than 1% of the critical load and 0.12 µgm⁻³ is less than the 0.3 µgm⁻³ development contribution stated within the guidance of ‘A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites’, IAQM 2020.

6.7.78 Therefore, no further assessment is required and the impact at E1 Breckland SPA as this is considered to be negligible.

Effects – 2030

6.7.79 Sensitive receptors adjacent to the Site and where there is predicted to be an impact from the development have been assessed for the two scenarios, “do nothing” and “do something”. The results from the assessment are presented in **Table 6.45** and

6.7.80 **Table 6.46.**

Table 6.45: Predicted air quality concentrations at sensitive receptors in 2030 “do nothing”

Receptor Number and Name		NO _x	NO ₂	PM ₁₀		PM _{2.5}
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	9.84	8.35	14.69	0.12	9.66
R2	53 Bury Road	14.60	11.02	14.48	0.13	9.37
R3	Bell Inn PH	15.51	11.29	19.02	2.31	10.04
R4	Flint Cottages	13.22	9.67	17.91	1.33	10.10
R5	Lanwades House	14.86	10.97	18.94	2.23	10.00
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.90	10.99	18.87	2.16	9.96
NMK1	23 Old Station Road	23.52	15.51	16.19	0.38	10.42
NMK3	Taxi rank	21.07	14.38	15.90	0.28	10.27
NMK5	Market St 'EE'	20.31	14.03	15.79	0.26	10.21
NMK6	Clock tower, crossing	20.61	14.17	15.83	0.26	10.23
NMK7	Rutland Arms' crossing	20.77	14.24	15.85	0.27	10.24
NMK8	'Savers' lamppost	13.86	10.94	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	20.75	14.23	15.84	0.27	10.24
NMK10	Old Station Road and Rous Road	20.79	14.25	15.85	0.27	10.24
NMK11	Café Nero' crossing	21.73	14.69	15.96	0.30	10.30
NMK12	KFC' downpipe	25.23	16.30	16.20	0.38	10.42
NMK14	White Hart' crossing	20.59	14.16	15.83	0.26	10.23
NMK15	"Newmarket – Park area"	20.29	14.02	15.79	0.25	10.21
NMK19	Blackbear Lane, and High Street	22.10	14.86	15.90	0.28	10.27
NAQO		-	40	40	35	25

Table 6.46: Predicted air quality concentrations at sensitive receptors in 2030 “do something - hybrid”

Receptor Number and Name		NO _x	NO ₂	PM ₁₀		PM _{2.5}
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}

R1	4 Byerley Cl	10.36	8.61	14.76	0.12	9.69
R2	53 Bury Road	14.89	11.16	14.50	0.13	9.38
R3	Bell Inn PH	16.68	11.84	19.18	2.47	10.12
R4	Flint Cottages	13.73	9.92	17.98	1.39	10.14
R5	Lanwades House	15.96	11.50	19.09	2.38	10.08
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	15.58	11.32	18.96	2.25	10.01
NMK1	23 Old Station Road	23.72	15.61	16.21	0.39	10.43
NMK3	Taxi rank	21.24	14.46	15.92	0.29	10.28
NMK5	Market St 'EE'	20.45	14.09	15.81	0.26	10.22
NMK6	Clock tower, crossing	20.75	14.23	15.85	0.27	10.24
NMK7	Rutland Arms' crossing	20.92	14.31	15.86	0.27	10.25
NMK8	'Savers' lamppost	13.89	10.95	15.05	0.13	9.83
NMK9	Old Station Road, Nancy's Tearoom	20.90	14.30	15.86	0.27	10.25
NMK10	Old Station Road and Rous Road	20.93	14.32	15.87	0.28	10.25
NMK11	Café Nero' crossing	21.89	14.76	15.98	0.31	10.31
NMK12	KFC' downpipe	25.50	16.42	16.23	0.39	10.44
NMK14	White Hart' crossing	20.74	14.23	15.84	0.27	10.24
NMK15	"Newmarket – Park area"	20.43	14.08	15.81	0.26	10.22
NMK19	Blackbear Lane, and High Street	22.30	14.95	15.92	0.29	10.28
NAQO		-	40	40	35	25

6.7.81 Presented in **Table 6.47** are the predicted change in concentrations of NO₂, PM₁₀ and PM_{2.5} and the change in the number of days where concentrations of PM₁₀ are greater than 50 µgm⁻³.

Table 6.47: Predicted change in air quality concentrations at sensitive receptors in 2030 “do something - hybrid”

Receptor Number and Name		NO ₂	PM ₁₀			
		Change in annual mean µgm ⁻³ (%)	Change in annual mean µgm ⁻³ (%)	Change in days >50 µgm ⁻³ (%)	Change in annual mean µgm ⁻³ (%)	
R1	4 Byerley Cl	0.51 (5.18)	0.26 (3.11)	0.07 (0.48)	0	(0.00)
R2	53 Bury Road	0.29 (1.99)	0.14 (1.27)	0.02 (0.14)	0	(0.00)
R3	Bell Inn PH	1.17 (7.54)	0.55 (4.87)	0.15 (0.79)	0.16	(6.92)

R4	Flint Cottages	0.51	(3.86)	0.25	(2.59)	0.07	(0.39)	0.05	(3.75)
R5	Lanwades House	1.1	(7.40)	0.53	(4.83)	0.15	(0.79)	0.15	(6.73)
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.68	(4.56)	0.33	(3.00)	0.09	(0.48)	0.08	(3.70)
NMK1	23 Old Station Road	0.2	(0.85)	0.1	(0.64)	0.02	(0.12)	0.01	(2.65)
NMK3	Taxi rank	0.16	(0.76)	0.08	(0.56)	0.02	(0.13)	0.01	(3.52)
NMK5	Market St 'EE'	0.14	(0.69)	0.06	(0.43)	0.02	(0.13)	0	(0.00)
NMK6	Clock tower, crossing	0.14	(0.68)	0.06	(0.42)	0.02	(0.13)	0	(0.00)
NMK7	Rutland Arms' crossing	0.15	(0.72)	0.07	(0.49)	0.02	(0.13)	0	(0.00)
NMK8	'Savers' lamppost	0.03	(0.22)	0.01	(0.09)	0	(0.00)	0	(0.00)
NMK9	Old Station Road, Nancy's Tearoom	0.15	(0.72)	0.07	(0.49)	0.02	(0.13)	0	(0.00)
NMK10	Old Station Road and Rous Road	0.15	(0.72)	0.07	(0.49)	0.02	(0.13)	0	(0.00)
NMK11	Café Nero' crossing	0.16	(0.74)	0.07	(0.48)	0.02	(0.13)	0.01	(3.31)
NMK12	KFC' downpipe	0.27	(1.07)	0.12	(0.74)	0.03	(0.19)	0.01	(2.62)
NMK14	White Hart' crossing	0.15	(0.73)	0.07	(0.49)	0.02	(0.13)	0	(0.00)
NMK15	Newmarket – Park area	0.14	(0.69)	0.06	(0.43)	0.02	(0.13)	0	(0.00)
NMK19	Blackbear Lane, and High Street	0.2	(0.91)	0.09	(0.61)	0.02	(0.13)	0.01	(3.51)

6.7.82 From **Table 6.47** changes in concentration of NO₂ are predicted to be 1.17 µgm⁻³ or less and changes in concentration of PM₁₀ are predicted to be 0.55 µgm⁻³ or less. It can also be seen that the change in the number of days where the concentration of PM₁₀ is predicted to be more than 50 µgm⁻³ will be 0.15 days or less. Changes in concentration of PM_{2.5} are predicted to be 0.16 µgm⁻³ or less.

Magnitude of Change – 2030 with Hybrid Application

6.7.83 Comparing the results in **Table 6.47** with the magnitude of change in **Table 6.8** it can be seen that all the receptors are predicted to experience a change in annual mean NO₂ and PM₁₀ concentrations which is “Small” or “Imperceptible” (<0.4 µgm⁻³).

6.7.84 It can also be seen that the receptors are predicted to experience an increase in annual mean PM_{2.5} concentrations are predicted to experience an “Imperceptible” (<0.4 µgm⁻³) or “No Change” and “No Change” in the number of days where PM₁₀ levels are greater than 50 µgm⁻³.

- 6.7.85 There is predicted to be “Imperceptible” (<1 day) or “No Change” in the number of days where PM₁₀ levels are greater than 50 µgm⁻³.

“Significance” of Change – 2030 with Hybrid development

- 6.7.86 The “Significance” of the predicted changes in NO₂, PM₁₀ and PM_{2.5} annual mean concentrations are presented in **Table 6.48**, **Table 6.49** and **Table 6.50**.

Table 6.48: NO₂ – Significance of change in annual mean concentrations following the completion of the proposed development in 2030

Receptor Number and Name		NO ₂		
		Change in annual mean (µgm ⁻³)	Magnitude of change	“Significance” of change
R1	4 Byerley Cl	0.51	Small	Negligible
R2	53 Bury Road	0.29	Imperceptible	Negligible
R3	Bell Inn PH	1.17	Small	Negligible
R4	Flint Cottages	0.51	Small	Negligible
R5	Lanwades House	1.1	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.68	Small	Negligible
NMK1	23 Old Station Road	0.2	Imperceptible	Negligible
NMK3	Taxi rank	0.16	Imperceptible	Negligible
NMK5	Market St 'EE'	0.14	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.14	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.15	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.03	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.15	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.15	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.16	Imperceptible	Negligible
NMK12	KFC' downpipe	0.27	Imperceptible	Negligible
NMK14	White Hart' crossing	0.15	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.14	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.2	Imperceptible	Negligible

6.7.87 With reference to the overall concentration of NO₂ presented in **Table 6.45** being well below the NAQO level of 40 µgm⁻³ and the magnitude of change presented in **Table 6.48** being “Small” or “Imperceptible” the “Significance” of change in NO₂ concentrations is considered “Negligible”.

Table 6.49: PM₁₀ – Significance of change in annual mean concentrations following the completion of the proposed development in 2030

Receptor Number and Name		PM ₁₀		
		Change in annual mean (µgm ⁻³)	Magnitude of Change	“Significance” of change
R1	4 Byerley Cl	0.26	Imperceptible	Negligible
R2	53 Bury Road	0.14	Imperceptible	Negligible
R3	Bell Inn PH	0.55	Small	Negligible
R4	Flint Cottages	0.25	Imperceptible	Negligible
R5	Lanwades House	0.53	Small	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.33	Imperceptible	Negligible
NMK1	23 Old Station Road	0.1	Imperceptible	Negligible
NMK3	Taxi rank	0.08	Imperceptible	Negligible
NMK5	Market St 'EE'	0.06	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.06	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.07	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.01	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.07	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.07	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.07	Imperceptible	Negligible
NMK12	KFC' downpipe	0.12	Imperceptible	Negligible
NMK14	White Hart' crossing	0.07	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.06	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.09	Imperceptible	Negligible

6.7.88 With reference to the overall concentrations of PM₁₀ presented in **Table 6.45** being well below the objective level of 40 µgm⁻³ and the magnitude of change presented in **Table 6.49** being “Small” or “Imperceptible”, the “Significance” of change in PM₁₀ concentration is considered to be “Negligible”.

Table 6.50: PM_{2.5} – Significance of change in annual mean concentrations following the completion of the proposed development in 2030

Receptor Number and Name		PM _{2.5}		
		Change in annual mean (µgm ⁻³)	Magnitude of change	“Significance” of change
R1	4 Byerley Cl	0	No Change	No Change
R2	53 Bury Road	0	No Change	No Change
R3	Bell Inn PH	0.16	Imperceptible	Negligible
R4	Flint Cottages	0.05	Imperceptible	Negligible
R5	Lanwades House	0.15	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.08	Imperceptible	Negligible
NMK1	23 Old Station Road	0.01	Imperceptible	Negligible
NMK3	Taxi rank	0.01	Imperceptible	Negligible
NMK5	Market St 'EE'	0	No Change	No Change
NMK6	Clock tower, crossing	0	No Change	No Change
NMK7	Rutland Arms' crossing	0	No Change	No Change
NMK8	'Savers' lamppost	0	No Change	No Change
NMK9	Old Station Road, Nancy's Tearoom	0	No Change	No Change
NMK10	Old Station Road and Rous Road	0	No Change	No Change
NMK11	Café Nero' crossing	0.01	Imperceptible	Negligible
NMK12	KFC' downpipe	0.01	Imperceptible	Negligible
NMK14	White Hart' crossing	0	No Change	No Change
NMK15	Newmarket - Parkarea	0	No Change	No Change
NMK19	Blackbear Lane, and High Street	0.01	Imperceptible	Negligible

- 6.7.89 With reference to the overall concentration of PM_{2.5} presented in **Table 6.45** being well below the NAQO level of 25 µgm⁻³ and the magnitude of change presented in **Table 6.50** being “Imperceptible” or “No Change” the “Significance” of change in PM_{2.5} concentrations is considered “Negligible” or “No Change”.
- 6.7.90 Presented in **Table 6.51** are the predicted changes in Nitrogen Oxide (NO_x) at the location of the ecological receptors which are within 200m of roads within the assessment area.

Table 6.51: Predicted Annual Average concentrations of NO_x at Ecological Receptor Locations 2030

Ecological Receptor		Predicted Annual Average NO _x Concentration (µgm ⁻³)				
		Do Nothing 2030	Do Something 2030	Process Contribution (PC)	PC as % of AQO	Background
E1	Breckland SPA	21.78	22.06	0.28	0.94	5.77
E2	Chippenham Fen	8.59	8.62	0.03	0.10	4.97
E3	Wicken Fen	9.01	9.02	0.01	0.03	5.31
Annual AQO/Critical (CL)	Mean Level	30				

6.7.91 With reference to **Table 6.51**, the maximum change in annual exposure to NO_x due to development generated traffic is 0.28 µgm⁻³ at receptor E1 – Breckland SPA. The increase is more than 1% of the critical load and 0.28 µgm⁻³ is less than the 0.3 µgm⁻³ development contribution stated within the guidance of ‘A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites’, IAQM 2020.

6.7.92 Therefore, no further assessment is required at E1 Breckland SPA as this is considered to be negligible.

Effects – 2031

6.7.93 Sensitive receptors adjacent to the Site and where there is predicted to be an impact from the development have been assessed for the two scenarios, “do nothing” and “do something”. The results from the assessment are presented in **Table 6.52** and **Table 6.53**.

Table 6.52: Predicted air quality concentrations at sensitive receptors in 2031 “do nothing”

Receptor Number and Name		NO _x	NO ₂	PM ₁₀		PM _{2.5}
		Annual mean µgm ⁻³	Annual mean µgm ⁻³	Annual mean µgm ⁻³	Days >50 µgm ⁻³	Annual mean µgm ⁻³
R1	4 Byerley Cl	9.61	8.24	14.69	0.12	9.66
R2	53 Bury Road	14.01	10.73	14.48	0.13	9.37
R3	Bell Inn PH	14.64	10.86	19.02	2.31	10.04
R4	Flint Cottages	12.52	9.32	17.91	1.33	10.10
R5	Lanwades House	14.08	10.59	18.94	2.23	10.00
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.13	10.61	18.87	2.16	9.96
NMK1	23 Old Station Road	22.05	14.83	16.20	0.38	10.42

NMK3	Taxi rank	19.92	13.84	15.90	0.29	10.27
NMK5	Market St 'EE'	19.23	13.51	15.80	0.26	10.21
NMK6	Clock tower, crossing	19.49	13.63	15.83	0.27	10.23
NMK7	Rutland Arms' crossing	19.63	13.70	15.85	0.27	10.24
NMK8	'Savers' lamppost	13.64	10.83	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	19.61	13.69	15.84	0.27	10.24
NMK10	Old Station Road and Rous Road	19.64	13.70	15.85	0.27	10.24
NMK11	Café Nero' crossing	20.46	14.09	15.96	0.30	10.30
NMK12	KFC' downpipe	23.51	15.50	16.20	0.38	10.42
NMK14	White Hart' crossing	19.48	13.63	15.83	0.26	10.23
NMK15	"Newmarket – Park area"	19.21	13.50	15.79	0.26	10.21
NMK19	Blackbear Lane, and High Street	20.83	14.26	15.91	0.29	10.27
NAQO		-	40	40	35	25

Table 6.53: Predicted air quality concentrations at sensitive receptors in 2031 “do something - hybrid”

Receptor Number and Name		NO _x	NO ₂	PM ₁₀		PM _{2.5}
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	10.05	8.45	14.76	0.12	9.70
R2	53 Bury Road	14.27	10.86	14.50	0.13	9.38
R3	Bell Inn PH	15.64	11.34	19.18	2.47	10.12
R4	Flint Cottages	12.95	9.53	17.98	1.39	10.14
R5	Lanwades House	15.04	11.05	19.09	2.38	10.08
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.71	10.89	18.96	2.25	10.01
NMK1	23 Old Station Road	22.22	14.91	16.22	0.39	10.43
NMK3	Taxi rank	20.06	13.90	15.92	0.29	10.28
NMK5	Market St 'EE'	19.40	13.59	15.82	0.26	10.22
NMK6	Clock tower, crossing	19.67	13.72	15.85	0.27	10.24
NMK7	Rutland Arms' crossing	19.82	13.79	15.87	0.28	10.25
NMK8	'Savers' lamppost	13.67	10.85	15.05	0.13	9.83

NMK9	Old Station Road, Nancy's Tearoom	19.80	13.78	15.87	0.27	10.25
NMK10	Old Station Road and Rous Road	19.82	13.79	15.87	0.28	10.25
NMK11	Café Nero' crossing	20.66	14.18	15.98	0.31	10.31
NMK12	KFC' downpipe	23.84	15.65	16.24	0.39	10.44
NMK14	White Hart' crossing	19.66	13.71	15.85	0.27	10.24
NMK15	"Newmarket – Park area"	19.38	13.58	15.81	0.26	10.22
NMK19	Blackbear Lane, and High Street	21.01	14.35	15.93	0.29	10.28
NAQO		-	40	40	35	25

6.7.94 Presented in **Table 6.54** are the predicted change in concentrations of NO₂, PM₁₀ and PM_{2.5} and the change in the number of days where concentrations of PM₁₀ are greater than 50 µgm⁻³.

Table 6.54: Predicted change in air quality concentrations at sensitive receptors in 2031 “do something - hybrid”

Something Hybrid

Receptor Number and Name		NO ₂		PM ₁₀		PM _{2.5}			
		Change in annual mean µgm ⁻³ (%)		Change in annual mean µgm ⁻³ (%)	Change in days >50 µgm ⁻³ (%)	Change in annual mean µgm ⁻³ (%)			
R1	4 Byerley Cl	0.44	(4.58)	0.21	(2.55)	0.07	(0.48)	0	(0.00)
R2	53 Bury Road	0.26	(1.86)	0.13	(1.21)	0.02	(0.14)	0	(0.00)
R3	Bell Inn PH	1.00	(6.83)	0.48	(4.42)	0.16	(0.84)	0.16	(6.92)
R4	Flint Cottages	0.43	(3.44)	0.21	(2.25)	0.07	(0.39)	0.05	(3.75)
R5	Lanwades House	0.96	(6.82)	0.46	(4.34)	0.15	(0.79)	0.15	(6.72)
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.58	(4.11)	0.28	(2.64)	0.09	(0.48)	0.08	(3.70)
NMK1	23 Old Station Road	0.17	(0.77)	0.08	(0.54)	0.02	(0.12)	0.01	(2.63)
NMK3	Taxi rank	0.14	(0.70)	0.06	(0.43)	0.02	(0.13)	0.01	(3.50)
NMK5	Market St 'EE'	0.17	(0.88)	0.08	(0.59)	0.02	(0.13)	0.01	(3.91)
NMK6	Clock tower, crossing	0.18	(0.92)	0.09	(0.66)	0.02	(0.13)	0.01	(3.77)
NMK7	Rutland Arms' crossing	0.19	(0.97)	0.09	(0.66)	0.02	(0.13)	0.01	(3.71)
NMK8	'Savers' lamppost	0.03	(0.22)	0.02	(0.18)	0	(0.00)	0	(0.00)
NMK9	Old Station Road, Nancy's Tearoom	0.19	(0.97)	0.09	(0.66)	0.02	(0.13)	0.01	(3.72)

NMK10	Old Station Road and Rous Road	0.18 (0.92)	0.09 (0.66)	0.02 (0.13)	0.01 (3.69)
NMK11	Café Nero' crossing	0.21 (1.03)	0.09 (0.64)	0.02 (0.13)	0.01 (3.31)
NMK12	KFC' downpipe	0.33 (1.40)	0.15 (0.97)	0.03 (0.19)	0.01 (2.62)
NMK14	White Hart' crossing	0.18 (0.92)	0.08 (0.59)	0.02 (0.13)	0.01 (3.78)
NMK15	Newmarket Parkarea	0.17 (0.89)	0.08 (0.59)	0.02 (0.13)	0.01 (3.92)
NMK19	Blackbear Lane, and High Street	0.18 (0.86)	0.09 (0.63)	0.02 (0.13)	0.01 (3.49)

- 6.7.95 From **Table 6.54** it can be seen that changes in concentration of NO₂ are predicted to be 1.00 µgm⁻³ or less and changes in concentration of PM₁₀ are predicted to be 0.48 µgm⁻³ or less. It can also be seen that the change in the number of days where the concentration of PM₁₀ is predicted to be more than 50 µgm⁻³ will be 0.16 days or less. Changes in concentration of PM_{2.5} are predicted to be 0.16 µgm⁻³ or less.

Magnitude of Change – 2031 with Hybrid Application

- 6.7.96 Comparing the results in **Table 6.54** with the magnitude of change in **Table 6.8** it can be seen that all the receptors are predicted to experience a change in annual mean NO₂ and PM₁₀ concentrations which is “Small” (0.4 – 2 µgm⁻³) or “Imperceptible” (<0.4 µgm⁻³).
- 6.7.97 It can also be seen that the receptors are predicted to experience an increase in annual mean PM_{2.5} concentrations which is “Imperceptible” (<0.4 µgm⁻³) or “No Change” and “Imperceptible” (<0.4 µgm⁻³) or “No Change” in the number of days where PM₁₀ levels are greater than 50 µgm⁻³.
- 6.7.98 There is predicted to be “Imperceptible” (<1 day) or “No Change” in the number of days where PM₁₀ levels are greater than 50 µgm⁻³.

“Significance” of Change – 2031 with Hybrid Application

- 6.7.99 The “Significance” of the predicted changes in NO₂, PM₁₀ and PM_{2.5} annual mean concentrations are presented in

6.7.100 **Table 6.55, Table 6.56** and

6.7.101 **Table 6.57.**

Table 6.55: NO₂ – Significance of change in annual mean concentrations following the completion of the proposed development in 2031

Receptor Number and Name		NO ₂		
		Change in annual mean (µgm ⁻³)	Magnitude of change	“Significance” of change
R1	4 Byerley Cl	0.44	Small	Negligible
R2	53 Bury Road	0.26	Imperceptible	Negligible
R3	Bell Inn PH	1	Imperceptible	Negligible
R4	Flint Cottages	0.43	Small	Negligible
R5	Lanwades House	0.96	Small	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.58	Small	Negligible
NMK1	23 Old Station Road	0.17	Imperceptible	Negligible
NMK3	Taxi rank	0.14	Imperceptible	Negligible
NMK5	Market St 'EE'	0.17	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.18	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.19	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.03	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.19	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.18	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.21	Imperceptible	Negligible
NMK12	KFC' downpipe	0.33	Imperceptible	Negligible
NMK14	White Hart' crossing	0.18	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.17	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.18	Imperceptible	Negligible

6.7.102 With reference to the overall concentration of NO₂ presented in **Table 6.52** being well below the NAQO level of 40 µgm⁻³ and the magnitude of change presented in

6.7.103 **Table 6.55** being “Small” or “Imperceptible” the “Significance” of change in NO₂ concentrations is considered “Negligible”.

Table 6.56: PM₁₀ – Significance of change in annual mean concentrations following the completion of the proposed development in 2031

Receptor Number and Name		PM ₁₀		
		Change in annual mean (µgm ⁻³)	Magnitude of Change	“Significance” of change
R1	4 Byerley Cl	0.21	Imperceptible	Negligible
R2	53 Bury Road	0.13	Imperceptible	Negligible
R3	Bell Inn PH	0.48	Small	Negligible
R4	Flint Cottages	0.21	Imperceptible	Negligible
R5	Lanwades House	0.46	Small	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.28	Imperceptible	Negligible
NMK1	23 Old Station Road	0.08	Imperceptible	Negligible
NMK3	Taxi rank	0.06	Imperceptible	Negligible
NMK5	Market St 'EE'	0.08	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.09	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.09	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.02	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.09	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.09	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.09	Imperceptible	Negligible
NMK12	KFC' downpipe	0.15	Imperceptible	Negligible
NMK14	White Hart' crossing	0.08	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.08	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.09	Imperceptible	Negligible

6.7.104 With reference to the overall concentrations of PM₁₀ presented in **Table 6.52** being well below the objective level of 40 µgm⁻³ and the magnitude of change presented in **Table 6.56** being “Small” or “Imperceptible”, the “Significance” of change in PM₁₀ concentration is considered to be “Negligible”.

Table 6.57: PM_{2.5} – Significance of change in annual mean concentrations following the completion of the proposed development in 2031

Receptor Number and Name		PM _{2.5}		
		Change in annual mean (μgm^{-3})	Magnitude of change	“Significance” of change
R1	4 Byerley Cl	0	No Change	No Change
R2	53 Bury Road	0	No Change	No Change
R3	Bell Inn PH	0.16	Imperceptible	Negligible
R4	Flint Cottages	0.05	Imperceptible	Negligible
R5	Lanwades House	0.15	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.08	Imperceptible	Negligible
NMK1	23 Old Station Road	0.01	Imperceptible	Negligible
NMK3	Taxi rank	0.01	Imperceptible	Negligible
NMK5	Market St 'EE'	0.01	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.01	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.01	Imperceptible	Negligible
NMK8	'Savers' lamppost	0	No Change	No Change
NMK9	Old Station Road, Nancy's Tearoom	0.01	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.01	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.01	Imperceptible	Negligible
NMK12	KFC' downpipe	0.01	Imperceptible	Negligible
NMK14	White Hart' crossing	0.01	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.01	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.01	Imperceptible	Negligible

6.7.105 With reference to the overall concentration of PM_{2.5} presented in **Table 6.52** being well below the NAQO level of 25 μgm^{-3} and the magnitude of change presented in

6.7.106 **Table 6.57** being “Imperceptible” or “No Change” the “Significance” of change in PM_{2.5} concentrations is considered “Negligible” or “No Change”.

6.7.107 Presented in **Table 6.58** are the predicted changes in Nitrogen Oxide (NO_x) at the location of the ecological receptors which are within 200m of roads within the assessment area.

Table 6.58: Predicted Annual Average concentrations of NO_x at Ecological Receptor Locations 2031

Ecological Receptor		Predicted Annual Average NO _x Concentration (µgm ⁻³)				
		Do Nothing 2031	Do Something 2031	Process Contribution (PC)	PC as % of AQO	Background
E1	Breckland SPA	20.42	20.66	0.24	0.81	5.56
E2	Chippenham Fen	8.52	8.54	0.03	0.31	4.81
E3	Wicken Fen	8.97	8.98	0.01	0.02	5.16
Annual AQO/Critical (CL)	Mean Level	30				

6.7.108 With reference to **Table 6.58**, the maximum change in annual exposure to NO_x due to development generated traffic is 0.24 µgm⁻³ at receptor E1 – Breckland SPA. The increase is more than 1% of the critical load and 0.24 µgm⁻³ is less than the 0.3 µgm⁻³ development contribution stated within the guidance of ‘A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites’, IAQM 2020.

6.7.109 Therefore, no further assessment is required at E1 Breckland SPA as this is considered to be negligible.

Mitigation

6.7.110 Taking into the account predicted “Small” or “Negligible” increases in NO₂ and PM₁₀ and “Negligible” increases in PM_{2.5} concentrations at sensitive receptors due to the development generated traffic following the completion of the development, and the fact that concentrations of NO₂ and PM₁₀ are predicted to be well below the NAQO level of 40 µgm⁻³, no additional mitigation is proposed.

6.7.111 Within the development site, concentrations of NO₂, PM₁₀ and PM_{2.5} are predicted to be well below the NAQO level of 40 µgm⁻³ and 25 µgm⁻³. Therefore, there are no proposals to mitigate air quality within the site.

Residual Effects

6.7.112 It has also been demonstrated that the air quality effects of altered traffic flows resulting from the Proposed Development on the local highway network at any sensitive receptors will be “Imperceptible Adverse”.

- 6.7.113 The sensitivity of receptors is “high” and the magnitude of change, following mitigation is “Imperceptible Adverse”. Therefore, there is likely to be a direct residual effect of Negligible and Not Significant.

6.8 Cumulative Assessment of Effects, Mitigation and Residual Effects

- 6.8.1 There is the potential for cumulative effects from the construction and enabling works at the Proposed Development and the surrounding cumulative schemes including the Kennett Garden Village, Land at Former St Felix School and Hatchfield Farm. There is also the potential for cumulative development generated traffic from the Proposed Development and the cumulative schemes.

Site Enabling and Construction

- 6.8.2 The following cumulative assessment is relevant for both the Detailed Application (Eastern Parcel only) and the Hybrid Application (Eastern Parcel plus Western Parcel).
- 6.8.3 The Kennett Garden Village, Land at Former St Felix School and Hatchfield Farm developments are a significant distance from the Applications Sites and construction dust and PM10 sources are highly unlikely to have a significant effect at sensitive receptors adjacent to the development.
- 6.8.4 It is assumed that all construction sites will have a dust management plan, and that risk assessment and mitigation measures will be in line with the IAQM guidance. Mitigation measures will ensure that there are negligible off-site impacts from each individual site. Moreover, if developments are constructed concurrently, the unmitigated risk remains the same and no further mitigation to those detailed in paragraphs 6.6.16 to 6.6.27 are required.
- 6.8.5 If the Kennett Garden Village, Land at Former St Felix School and Hatchfield Farm developments commence concurrently with the development, it is highly unlikely that cumulative construction traffic from the cumulative schemes will result in significant adverse effects based on the relatively low changes in pollutants (PM10, PM2.5 and NO2) from the development.
- 6.8.6 It should be noted that any construction and enabling works effects are temporary and would occur over a short time period. The cumulative enabling and construction effects are considered to remain unchanged from those presented for the main assessment and would be Negligible (not significant).

6.9 Cumulative Assessment of Effects, Mitigation and Residual Effects

- 6.9.1 As discussed in Paragraph 6.5.35, the future baseline has accounted for the Kennett Garden Village, Land at Former St Felix School and Hatchfield Farm schemes coming forward in the proposed future years of 2029, 2030 and 2031. The cumulative assessment has therefore looked at the effects associated with the Proposed Development and the three aforementioned schemes coming forward.

Operation

- 6.9.2 The following cumulative assessment is relevant for both the Detailed and Hybrid Planning Applications.

6.9.3 The results from the assessment demonstrated that the air quality effects of altered traffic flows resulting from the development on the local highway network at any sensitive receptors in 2029, 2030 and 2031 will be “Imperceptible Adverse”.

6.9.4 The sensitivity of receptors is “high” and the magnitude of change, following mitigation is “Imperceptible Adverse”. Therefore, there is likely to be a direct residual effect of Negligible and Not Significant.

6.10 Summary

6.10.1 Chapter 6: Air Quality of the ES presents the findings of an assessment of the likely significant effects of the EIA development on Air Quality of the Site and surrounding area.

6.10.2 The assessment has been undertaken to demonstrate the impact on concentrations of NO₂, PM₁₀ and PM_{2.5} at sensitive receptors as a result of development generated traffic. Annual average concentrations have been compared to the National Air Quality Objective Levels (NAQO) and the magnitude and significance of change has also been assessed against national guidelines.

6.10.3 Existing concentrations are well below the NAQO levels for the Base Year 2025 and the Future Years 2029, 2030 and 2031. Impacts from development generated traffic at all the receptors is predicted to be “Negligible” in 2029, 2030 and 2031.

6.10.4 Constraints on development have been assessed using background concentrations, existing and future emissions from road traffic at the proposed development site. The results of the assessment indicate that concentrations of NO₂, PM₁₀ and PM_{2.5} are well below NAQO levels across the development site in 2029, 2030 and 2031.

6.10.5 Also assessed are the likely impacts from the construction of the development. The results of the assessment indicate that with appropriate mitigation the impacts from the construction of the development will be “Negligible”.

Table 6.59: Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D	Geo	D
Enabling and Construction Works – Detailed Application (Eastern Parcel)							
Residential Receptors adjacent to the Site	Effect of dust pollution on local residents from enabling and construction activities including construction traffic	Negligible Adverse	Not Significant	L	D	T	St
Residential Receptors	The effect of changes in PM ₁₀ concentrations on	Negligible Adverse	Not Significant	L	D	T	St

adjacent to the Site	human health of local residents from enabling and construction activities including construction traffic						
Enabling and Construction Works – Hybrid Application (Eastern and Western Parcel)							
Residential Receptors adjacent to the Site	Effect of dust pollution on local residents from enabling and construction activities including construction traffic	Negligible Adverse	Not Significant	L	D	T	St
Residential Receptors adjacent to the Site	The effect of changes in PM ₁₀ concentrations on human health of local residents from enabling and construction activities including construction traffic	Negligible Adverse	Not Significant	L	D	T	St
Completed Development – Detailed Application (Eastern Parcel)							
Residential Receptors	NO ₂	Negligible	Not Significant	L	D	P	Lt
Residential Receptors	PM ₁₀	Negligible	Not Significant	L	D	P	Lt
Residential Receptors	PM _{2.5}	Negligible	Not Significant	L	D	P	Lt
Completed Development - Hybrid Application (Eastern and Western Parcels)							
Residential Receptors	NO ₂	Negligible	Not Significant	L	D	P	Lt
Residential Receptors	PM ₁₀	Negligible	Not Significant	L	D	P	Lt
Residential Receptors	PM _{2.5}	Negligible	Not Significant	L	D	P	Lt
Notes: Residual Effect - Scale = Negligible / Minor / Moderate / Major - Nature = Beneficial or Adverse Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N) D = Direct / I = Indirect P = Permanent / T = Temporary St = Short Term / Mt = Medium Term / Lt = Long Term							

7.0 DRAINAGE AND FLOOD RISK

7.1 Introduction

- 7.1.1 This Chapter reports the assessment of the likely significant environmental effects of the development at each Application Site with respect to the water environment. It describes the methods used to assess the effects; the baseline conditions at the Sites; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.
- 7.1.2 It is worth prefacing this Chapter with the notion of embedded mitigation. In the context of this Chapter embedded mitigation primarily relates to the treatment, temporary storage, and disposal to ground of surface water runoff generated by rainfall on the impermeable surfaces created by the development. Specifically the embedded mitigation is the Sustainable Drainage System (SuDS) which will be installed as part of the each development. Importantly the SuDS schemes are an inherent part of each development and have been considered as part of the layout design, not mitigation measures included after an assessment of effects.
- 7.1.3 It is also worth noting that wider effects on the water environment associated with water supply and wastewater provision fall outside the scope of this Chapter. The potential effects of providing treated water to, and treating wastewater generated by, the Sites falls to Anglian Water (AW) as the incumbent water and wastewater undertaker. This will potentially be aided by the inclusion of demand reduction through local planning policy.
- 7.1.4 AW plan their supply and treatment strategy as part of their five year asset management plan (AMP) process. Their business plan for the 2025-2030 period (AMP8) outlines their proposals to increase efficiency, reduce demand for potable water, and create wetlands to improve water quality. It may be worth noting that the Site does not lie in a Nutrient Neutrality Catchment so no development specific measures are expected to be required in order to address the potential increase in nutrient loads associated with the wastewater flows generated by the each development.
- 7.1.5 The development will include water demand reduction measures to help manage the effect of increased water demand, and resulting wastewater generation. Such measures would also be considered as embedded mitigation measures.
- 7.1.6 The assessment takes into account current legislation, policy and guidance.
- 7.1.7 This Chapter should be read together with Chapter 5.

7.2 Appendices

Table 7.1: Appendices for Chapter 7

Appendix No.	Document
7.1	Flood Risk Assessment – hybrid application

7.3 Legislation, Policy and Guidance

Legislative Framework

- 7.3.1 The following pieces of legislation are relevant to the development in that they define roles and responsibilities of reviewers and service providers. The legislation is not directly related to the assessment of effects (it does not establish standards and measures for assessment).
- 7.3.2 Flood and Water Management Act 2010 - the Flood and Water Management Act establishes Local and Unitary Authorities as Lead Local Flood Authorities (LLFA) and defines their roles and responsibilities with regards to the management of local flood risk. The Act requires the LLFA to record reported incidents of flooding and also maintain a register of flood defence assets (effectively anything which is considered to provide a flood defence function).
- 7.3.3 The Water Industry Act 1991 defines powers and duties in relation to sewerage and water supply companies and the overseeing body (Ofwat).
- 7.3.4 The Water (special Measures) Bill is awaiting Royal Assent having been through both Houses. The Bill seeks to bolster the powers of water industry regulators in order to prevent (and take punitive action against) water and sewerage companies whose actions (or inaction) leads to pollution of the water environment.

Planning Policy

National Planning Policy

- 7.3.5 As above, various pieces of national and local policy are relevant to securing the embedded mitigation measures associated with the development.
- 7.3.6 Paragraphs 181 and 182 of Chapter 14 of National Planning Policy Framework (NPPF) 2024 are relevant to the provision and oversight of embedded mitigation measures at the site in that they require the submission of a stand-alone flooding and drainage specific report (a Flood Risk Assessment or FRA) which sets out the proposed SuDS.

Local Planning Policy

- 7.3.7 Policy CS 4 of the Forrest Heath Core Strategy Development Plan Document 2001-2026 promotes the use of low water volume fittings (sanitary ware) and grey water recycling and the inclusion of SuDS.

7.3.8 The West Suffolk Local Plan Submission Draft (Regulation 19) 2024 includes several policies which reference items relevant to the embedded mitigation measures include in the development:

- Strategic Policy SP1 includes the requirement to contribute to the quality of groundwater and rivers, the use of SuDS, the reduction and prevention of pollution, and the use of higher water efficiency standards.
- Policy LP1 includes the requirement to manage surface water runoff and increase water efficiency.
- Policy LP5 requires the inclusion of SuDS.
- Policy LP6 requires the inclusion of water butts, measures to reduce water consumption to 100 litres per person per day, and that the development does not pollute the water environment.
- Policy LP8 addresses the need to prevent pollution in all forms.

Guidance

7.3.9 For clarity the guidance referenced below relates to the initial (and later detailed) design of the of the embedded mitigation measures.

7.3.10 Guidance for Pollution Prevention (GPP) documents replace the older series of Pollution Prevention Guidance (PPG) documents. The documents have broad relevance to the later stages of the development (and would for example form part of the later Construction Management Plan), but none are specifically relevant to this Chapter.

7.3.11 CIRIA report C753, The SuDS Manual, includes guidance on implementation of a wide range of SuDS techniques and how they may be used to effectively treat development runoff to prevent pollution of the water environment.

7.3.12 The Lead Local Flood Authority (LLFA) has published general guidance on the provision of some SuDS components which draws on CIRIA report C753 The SuDS Manual.

7.4 **Assessment, Methodology and Significance Criteria**

Relevant Elements of the Applications

7.4.1 Both the impermeable surfaces (roofs, roads etc) and SuDS elements are relevant to the assessment of effects. The former is the source of the increase in quantity of runoff and the potential pollutants, the latter is the means by which effects on the water environment will be prevented (the embedded mitigation).

Scope of the Assessment

7.4.2 The scope of this Chapter is confined to the effects of the Planning Applications on the quality and quantity of water in the surrounding water environment. As runoff from development will be disposed of to the ground, via infiltration, the primary receptor is groundwater (in the underlying Chalk).

- 7.4.3 The River Kennett flows broadly northwards some 500 m to the east of the Site (Eastern Parcel). The watercourse flows through superficial deposits of clay, silt, sand, and gravel. The watercourse is ephemeral and can be observed to run dry following periods of low/no rainfall. The watercourse is not close enough to the Site to reasonably be considered as being in hydrological connectivity with the Site.
- 7.4.4 It should be noted that with the exception of the demolition of the existing buildings and hardstanding in the east of the Site, the effects of the development will be the same with each of the planning applications. The majority of the effects and mitigation discussed in this Chapter are therefore duplicated.
- 7.4.5 It is worth noting that the effects of the Planning Applications are not considered in combination with other developments. As development runoff from development will be self-contained (i.e. suitably treated and discharged to the ground) in both the construction and operational phases there is no cumulative effect.

Extent of the Study Area

- 7.4.6 The study area is confined to the Application Sites themselves, and immediate area. The effects of development runoff would not reasonably extend to any great distance from the Application Sites.

Method of Baseline Data Collation

- 7.4.7 This Chapter relies on published information (see list below) the topographical survey (included in Appendix 7.1), the Ground Investigation Report (see Appendix 2.3) and on-site infiltration test results (included in Appendix 7.1).
- British Geological Survey (BGS) mapping (included in Appendix 7.1)
 - Soilscales web pages <https://www.landis.org.uk/soilscales/>
 - The Flood Risk Map (published in January 2025) <https://check-long-term-flood-risk.service.gov.uk/map>
 - The Magic Map Application (hosted by DEFRA) <https://magic.defra.gov.uk/>
 - River basin catchment mapping <https://environment.data.gov.uk/catchment-planning/WaterBody/GB105033042990>

Identification of Sensitive Receptors

- 7.4.8 Groundwater (beneath the site) is the main receptor with regard to this Chapter. The River Kennett is the nearest surface water body in the area but the nature of the development would not reasonably impact the watercourse. Waterbodies further afield (those receiving treated effluent and forming part of the water supply network through abstractions) are outside the scope of this Chapter as discussed above.

Significance Criteria

- 7.4.9 Sensitivity of receptors is a matter of professional judgement. For this chapter the sensitivity assessment uses the three categories below.

- High – the receptor has limited capacity to absorb the effect without fundamentally altering the baseline condition.
- Moderate – the receptor has some capacity to absorb the effect without significantly altering the baseline condition.
- Low – the receptor is likely to tolerate the effect without detriment to the baseline condition.

7.4.10 The magnitude of effect is judged based on the consequences of the effect ranging from negligible to major. The consequence of an effect on the water environment is related to the geographical extent of the effect. The scale is a sliding scale with no prescribed distances. For the purposes of this chapter, negligible is defined as the surrounding area (within circa 2 km of the boundary). Major would be defined as a notable change in the baseline conditions of the water environment at a catchment wide scale.

Significance of Effects

7.4.11 The significance of a potential effect is determined by the combination of the magnitude and sensitivity of the receptor. This follows the generalised approach and is considered appropriate for the nature of development in the context of the local water environment. Note that Negligible is effectively the zero position on the scale of significance. Impacts which are assessed as being of Negligible significance are not considered to require mitigation for the purpose of this chapter. Impacts assessed as Moderate or above would reasonably be considered as significant for the purpose of this Chapter.

Table 7.2: Significance Criteria for Chapter 7

	Sensitivity of receptor		
Magnitude	High	Moderate	Low
Major	Major	Major-Moderate	Moderate-Minor
Moderate	Major-Moderate	Moderate- Minor	Minor
Minor	Moderate- Minor	Minor	Minor-Negligible
Negligible	Negligible	Negligible	Negligible

7.4.12 It is worth noting that the potential effects of a development of this type and scale would not ordinarily rise to a level of significance which would require the inclusion of a Water Chapter within the Environmental Statement. The potential effects would (and will) all be addressed and managed within topic specific documents mandated by planning legislation and planning policy (and the application of planning conditions).

Limitations and Assumptions

- 7.4.13 The assessment assumes that reasonable care and attention will be taken by contractors and housebuilders progressing the development at the post planning stages. This is not an onerous assumption given the legislative frameworks within which the subsequent work will be contained.
- 7.4.14 The assessment of likely effects is based on the available published data, and the Ground Investigation Technical Report (see Appendix 2.3). Additional data may discover an outlier which alters the findings of this Chapter, but on balance the likelihood of a previously unpredicted and undiscovered potential source of pollution requiring novel management arising is low.

7.5 Baseline Conditions

- 7.5.1 The Eastern Parcel (Detailed Planning Application) extends to approximately 16.5ha and Hybrid Application Site (Eastern Parcel plus Western Parcel) extends to 48.5ha of mixed use land. The majority of the Site are currently laid to woodland and grassland. The development portion of the Site is focused in the eastern third. Land uses comprise buildings and associated hardstanding, roads, and parking. Hardstanding surfaces vary between formal sealed surfaces (blacktop) and compacted stone. The impermeable area associated with the developed portion of the Site area extends to some 3.73 ha (as measured from the topographical survey included in Appendix 7.1).
- 7.5.2 The dominant downward slope direction of Site is northwards, with cross falls 'outwards' to the west and east. Existing ground levels range from approximately 59.0 m AOD a third of the way along the southern boundary to approximately 42.5 m AOD in the north-western corner of the site and approximately 33.6 m AOD in the north-eastern corner of the site (at the Sire Lane junction with Bury Road/the B1506. Ground levels at the existing access (Sir Graham Kirkham Avenue) are approximately 36.0 m AOD.
- 7.5.3 The Site (Eastern and Western Parcels) are not shown on the Flood Risk Map to be affected by any notable flooding. The Site are not affected by flooding from a watercourse, or reservoir failure and the mapping shows only limited patches of surface water flooding which would not reasonably be considered as significant or unmanageable. This is discussed further in the FRA (Appendix 7.1) but is not considered further in this Chapter.
- 7.5.4 The P Site is underlain by the Holywell Nodular Chalk unit. This is overlain by a narrow band of sand and gravel running along the southern boundary of the site. The site investigation (Appendix 5.X) confirmed the presence of the Chalk, along with topsoil, made ground, and superficial deposits of clayey gravelly sand and gravelly sandy clay.
- 7.5.5 The Ground Investigation Technical Note (see Appendix 2.3) does not identify any sources of contamination and suggests that widespread significant contamination is unlikely. The report notes that further investigation of the ground around potential sources of small scale contamination as part of a later stage discovery strategy. The Ground Investigation Technical Note notes a number of potential local contamination sources to be included in a discovery strategy (or similar report):

- Fuel tanks.
- Substations.
- Laboratory buildings.
- An area in the north-east of the Site where chemicals may have been ‘dumped’ historically.
- Existing (foul/combined) sewer infrastructure.
- Soil bunds and mounds of unknown origin.
- Pathogens and waste related to the previous veterinary uses.
- An on-site incinerator.

- 7.5.6 Groundwater was not encountered in one of the 11 boreholes (WS01 to WS11) sunk in the eastern part of the Site (the subject of the detailed planning application). The groundwater is described as seepage, likely associated with the superficial deposits rather than indicating the water level in the underlying Chalk. Groundwater levels are noted in the Ground Investigation Technical Note (see Appendix 2.3) as being circa 20 m or more below ground level.
- 7.5.7 Infiltration testing at the site (included in the FRA, Appendix 7.1) yielded suitable rates to support the disposal of development runoff via infiltration.
- 7.5.8 Soils at the Application Sites are reported as free draining, Soilscape 7 and Soilscape 3. Considered in light of the underlying geology, this supports the assertion that a significant amount of rural runoff from the undeveloped elements of the Sites soaks into the ground and enters the underlying Chalk. The most common pathway by which water percolating through the Site soils will enter the Chalk is identified on BGS mapping (included in Technical Appendix 7.1) as via fractures (or joints or ‘gaps’) in the structure of the Chalk. This pathway affords little in the way of treatment and/or removal of potential pollutants in the percolating water
- 7.5.9 The Sites lies in groundwater Source Protect Zone 3, or the total catchment area. This defines the total potential catchment for an abstraction borehole. The total catchment area is defined as the furthest extent from which groundwater could ‘reach’ the borehole extraction location.
- 7.5.10 The north-western corner of the Site (Western Parcel) hosts a water supply pipe. The pipe is part of the infrastructure which helps transfer untreated (raw) water from the Ely Ouse to Essex. The pipe conveys flow from the pumping station in Kennett (circa 2.0 km to the north of the Site) to the Kirtling Brook at Kirtling Green some 10.0 km to the south. The water goes on to flow into the River Stour before being extracted, treated, and enter the Essex water supply infrastructure.
- 7.5.11 Wastewater from the existing development at the Site drains via a connection (pumped and gravity) to the adopted Anglian Water sewer network in the land to the east of the site (in Sire Lane). The existing pumping station is also accessed via Sire Lane.

7.6 Assessment of Effects, Mitigation and Residual Effects

Site Enabling and Construction

Detailed Application (Eastern Parcel)

Effects

- 7.6.1 Enabling works will involve a topsoil strip over significant areas of currently permeable cover. Given the permeability of the underlying Chalk this is unlikely to lead to any measurable increase in surface water runoff exiting the site and does not rise to a level of significance which would require inclusion in this Chapter.
- 7.6.2 Dewatering is unlikely to be required given the limited potential for shallow groundwater. Abstracted water would tend to be reapplied to the ground at the Site to allow it to percolate back into the groundwater body (rather than being discharged off-site). The effect of any required dewatering does not rise to a level of significance which would require assessment in this Chapter.
- 7.6.3 Demolition works may include removal of wastewater infrastructure (pipes, sumps, chambers), and defunct storage tanks (storing materials, fuels, and waste). The unmanaged removal of such features might introduce pollutants into the receiving wastewater system and possibly lead to localised spills. Spills at the surface would be unlikely to reach the water environment and pollutants being disturbed and released into the off-site wastewater system would be subject to treatment at the receiving works. The effect of pollutants entering the off-site wastewater system would be negligible.
- 7.6.4 The foundation solution will be determined at the later post planning design stages. Non piled (i.e. 'normal' depth) foundations would not tend to create a pathway for potential pollutants to come into close contact with the groundwater beneath the site.
- 7.6.5 A piled solution appears unlikely based on the discussion in the Ground Investigation Technical Note in Appendix 2.3. In the event that piled solution is required then there will be an increased potential for transmission of potential pollutants into the deeper layers of Chalk. A pollution incident (a spill of hazardous liquid used in the construction process) would be relatively unlikely in a well managed site. The volume of liquid will also tend to be minor-negligible compared to the extent of the groundwater body in the Chalk. The effect on the groundwater would be minor-negligible.
- 7.6.6 Creation of the impermeable surfaces as a result of the development prior to the completed installation of the embedded mitigation (the surface water management network and facilities) would result in some surface water runoff being shed towards the northern boundary of the Site. The majority of such water would tend to be intercepted by undeveloped area of the Site, and the belt of trees which runs along the majority of the northern boundary separating the Site from Bury Road/the B1506). The volume of flow leaving the site and entering the water environment (the highway drainage network) is therefore unlikely to be notable. The effect with regard to the quantity of water entering the (surface) water environment would therefore be minor.

- 7.6.7 Untreated runoff being shed by early hardstanding and impermeable cover would (as discussed above) be intercepted and infiltrate into the site, or run overland and exit the site (entering the off-site highway drainage network). Prior to occupation the runoff is unlikely to contain high levels of pollutants. The resulting effect on the quality of the (surface or groundwater) water environment would be minor.

Mitigation

- 7.6.8 For those effects assessed as negligible no specific mitigation is proposed as negligible can functionally be considered as zero. Various reports and investigations and management processes will form part of the detailed post planning and construction process in order to discover, monitor, and manage any pollutants, associated with the Site and development. Whilst not specific mitigation measures, it may be worth outlining the broad reports which will be provided:
- Discovery strategy
 - Demolition management plan
 - Construction management plan
 - Construction water management plan
- 7.6.9 If piling is required in areas of contaminated ground then remediation (removal of contaminated ground) would be prioritised – no piling is anticipated. This would be set out in a contamination remediation strategy. In the event that removal is not possible, and piling is unavoidable in the area, then a piling impact assessment will establish risk reduction and avoidance measures (contiguous piling for example). This would reduce the effect from minor-negligible to negligible.
- 7.6.10 The early installation of the strategic surface water infiltration basins and direction of runoff into them (from partially complete and/or temporary above and below ground networks) would prevent overland flows exiting the site and reduce the effect from minor to negligible.
- 7.6.11 The installation of temporary treatment measures upstream of the strategic infiltration basins would provide interim treatment. The number of additional treatment basins in the train would be scaled to suit the assessed pollutant loads and types. The inclusion of temporary treatment would reduce the effect from minor to negligible.
- 7.6.12 For clarity, the above measures would be presented in a construction surface water management plan (or relevant section of the broader construction management plan).

Residential Effects

- 7.6.13 No residual effects have been identified.

Hybrid Application (Eastern Parcel and Western Parcel)

Effects

- 7.6.14 Demolition works may include removal of wastewater infrastructure (pipes, sumps, chambers), defunct storage tanks (storing materials, fuels, and waste). The unmanaged removal of such features might introduce pollutants into the receiving wastewater system and possibly lead to localised spills. Spills at the surface would be unlikely to reach the water environment and pollutants being disturbed and released into the off-site wastewater system would be subject to treatment at the receiving works. The effect of pollutants entering the off-site wastewater system would be negligible.
- 7.6.15 Enabling works will involve a topsoil strip over significant areas of currently permeable cover. Given the permeability of the underlying Chalk this is unlikely to lead to any measurable increase in surface water runoff exiting the site and does not rise to a level of significance which would require inclusion in this Chapter.
- 7.6.16 Dewatering is unlikely to be required given the limited potential for shallow groundwater. Abstracted water would tend to be reapplied to the ground at the Site to allow it to percolate back into the groundwater body (rather than being discharged off-site). The effect of any required dewatering does not rise to a level of significance which would require assessment in this Chapter.
- 7.6.17 Damage to the water supply pipe in the west of the Site combined with a spill of liquid pollutants (fuels, lubricants etc) may introduce pollutants to the receiving watercourse (the Kirtling Brook). The effect of this would be minor (as the volume of such a spill from a properly managed site would be low). The effect may be far reaching however so would be minor.
- 7.6.18 The foundation solution will be determined at the later post planning design stages. Non piled (i.e. 'normal' depth) foundations would not tend to create a pathway for potential pollutants to come into close contact with the groundwater beneath the site.
- 7.6.19 A piled solution appears unlikely based on the discussion in the Ground Investigation Technical Note (see Appendix 2.3). In the event that piled solution is required then there will be an increased potential for transmission of potential pollutants into the deeper layers of Chalk. A pollution incident (a spill of hazardous liquid used in the construction process) would be relatively unlikely in a well managed site. The volume of liquid will also tend to be minor-negligible compared to the extent of the groundwater body in the Chalk. The effect on the groundwater would be minor negligible.
- 7.6.20 Creation of the impermeable surfaces as a result of the development prior to the installation of the embedded mitigation (the surface water management network and facilities) would result in some surface water runoff being shed towards the northern boundary of the Site. The majority of such water would tend to be intercepted by undeveloped area of the Site, and the belt of trees which runs along the majority of the northern boundary separating the Site from Bury Road/the B1506). The volume of flow leaving the site and entering the water environment (the highway drainage network) is therefore unlikely to be notable. The effect would therefore be minor.

- 7.6.21 Untreated runoff being shed by early hardstanding and impermeable cover would (as discussed above) be intercepted and infiltrate into the ground, or run overland and exit the site (entering the off-site highway drainage network). Prior to occupation, the runoff is unlikely to contain high levels of pollutants. The resulting effect on the quality of the (surface or groundwater) water environment would be minor.

Mitigation

- 7.6.22 Damage to the supply pipe would be avoided by establishing the precise location of the pipe via survey and providing suitable off-sets in which no construction and/or appropriately cautious construction activities (shallow excavations with small plant for example) will be proposed. Protection of the pipe would also be designed as necessary for any built development over, or within the identified easement. Such measures would reduce the effect of damaging the pipe (by removing the risk of damage) from minor to negligible.
- 7.6.23 For those effects assessed as negligible no specific mitigation is proposed as negligible can functionally be considered as zero. Various reports and investigations and management processes will form part of the detailed post planning and construction process in order to discover, monitor, and manage any pollutants, associated with the Applications Sites and development. Whilst not specific mitigation measures, it may be worth outlining the broad reports which will be provided:
- Discovery strategy
 - Demolition management plan
 - Construction management plan
 - Construction water management plan
- 7.6.24 If piling is required in areas of contaminated ground then remediation (removal of contaminated ground) would be prioritise – no piling is anticipated. This would be set out in a contamination remediation strategy. In the event that removal is not possible, and piling is unavoidable in the area then a piling impact assessment will establish risk reduction and avoidance measures (contiguous piling for example). This would reduce the effect from minor negligible to negligible.
- 7.6.25 The early installation of the strategic surface water infiltration facilities and direction of runoff into them (from partially complete and/or temporary above and below ground networks) would prevent overland flows exiting the site and reduce the effect from minor to negligible.
- 7.6.26 The installation of temporary treatment measures upstream of the strategic infiltration basins would provide interim treatment. The number of additional treatment basins in the train would be scaled to suit the assessed pollutant loads and types. The inclusion of temporary treatment would reduce the effect from minor to negligible.
- 7.6.27 For clarity, the above measures would be presented in a construction surface water management plan (or relevant section of the broader construction management plan).

Residual Effect

- 7.6.28 No residual effects have been identified.

Operation

Detailed Application (Eastern Parcel)

Effects

- 7.6.29 The development includes sustainable drainage measures (refer to the detailed surface water management scheme presented in Appendix 7.1). The measures will remove and treat pollutants associated with the proposed land use, provide storage for up to and including the 1 in 100 annual probability rainfall event including climate change, and allow on-site infiltration of the treated development runoff to the ground. The measures comprise embedded mitigation and are integral to the development (as required by national and local planning policy). The effect of the operational phase of the development on the water environment in respect of both quality and quantity is negligible.

Mitigation

- 7.6.30 No additional mitigation measures are necessary as the embedded mitigation measures are suitable.

Residual Effects

- 7.6.31 No residual effects have been identified.

Hybrid application (Eastern Parcel and Western Parcel)

Effects

- 7.6.32 The development includes sustainable drainage measures (refer to the detailed and outline surface water management scheme presented in Appendix 7.1). The measures will remove and treat pollutants associated with the proposed land use, provide storage for up to and including the 1 in 100 annual probability rainfall event including climate change, and allow on-site infiltration of the treated development runoff to the ground. The measures comprise embedded mitigation and are integral to the development (as required by national and local policy). The effect of the operational phase of the development on the water environment in respect of both quality and quantity is negligible.

Mitigation

- 7.6.33 No additional mitigation measures are necessary as these embedded mitigation measures will address (and avoid) negative effects on the quality and quantity of the water environment

Residual Effects

- 7.6.34 No residual effects have been identified.

7.7 Cumulative Assessment of Effects, Mitigation and Residual Effects

Site Enabling and Construction

Detailed Application (Eastern Parcel)

- 7.7.1 The nature of the water environment and the likely effects associated with the enabling and construction phases of the development means that there are no cumulative effects to be considered. The management of potential pollutants and avoidance of an increase in runoff rates or volumes leaving the site will be self-contained with none of the mitigated effects rising above negligible.

Hybrid Application (Eastern and Western Parcel)

- 7.7.2 The nature of the water environment and the likely effects associated with the enabling and construction phases of the development means that there are no reasonable cumulative effects to be considered. The management of potential pollutants and avoidance of an increase in runoff rates or volumes leaving the site will be self-contained with none of the mitigated effects rising above negligible.

7.8 Cumulative Assessment of Effects, Mitigation and Residual Effects

Operation

Detailed Application (Eastern Application)

- 7.8.1 Management of development runoff will be self contained (as required by national and local policy) with on-site measures provided to manage the quality of runoff and allow it to infiltrate to the ground (as existing). The lack of any notable effect (with regard to quality or quantity) on the water environment means that there are no cumulative effects to be considered.

Hybrid Application (Eastern and Western Parcel)

- 7.8.2 Management of development runoff will be self contained (as required by national and local policy) with on-site measures provided to manage the quality of runoff and allow it to infiltrate to the ground (as existing). The lack of any notable effect (with regard to quality or quantity) on the water environment means that there are no cumulative effects to be considered.

7.9 Summary

- 7.9.1 The uses associated with the development are not likely to generate novel pollutants and would not require any specialised or novel surface water management measures. The proposed contemporary scheme (which would be secured by planning policy and oversight of statutory bodies) following a sustainable drainage approach would allow for surface water to be managed in order to avoid a negative effect on the water environment.

7.9.2 The adherence to normal best practice, contamination discovery and control protocols would manage effects on the water environment by identifying and removing, and suitably disposing of contaminants. Protocols would be presented in a variety of documents (secured through planning conditions) e.g.:

- Discovery strategy
- Demolition management plan
- Construction management plan
- Construction water management plan

Table 7.3: Summary of Pre and Post Mitigation Effects

Potential effect	Significance		
	Pre mitigation	Post mitigation	Residual
Enabling and construction			
Water quality – release of pollutants as a result of demolition works.	Negligible	Negligible	N/A
Water quality – piling introducing new pathways to the groundwater	Minor – negligible	Negligible	N/A
Water quality – damage to the water supply pipe and introduction of pollutants into the damaged pipe	Minor	Negligible	N/A
Water quantity – increase in runoff exiting the Site prior to completion of the operational drainage scheme	Minor	Negligible	N/A
Water quality – potential contaminants from new hardstanding areas exiting the Site prior to completion of the operational drainage scheme	Minor	Negligible	N/A
Operational			
Water quality	Negligible	Negligible	N/A
Water quantity	Negligible	Negligible	N/A

8.0 ECOLOGY

8.1 Introduction

- 8.1.1 This Chapter reports the assessment of the likely significant environmental effects of the development at the Application Sites with respect to Ecology and Biodiversity. It describes the methods used to assess the effects; the baseline conditions currently existing at the Site and surrounding area; the mitigation measures required to prevent, reduce or offset any significant negative effects upon statutory and non-statutory designated sites, protected species and habitats of principal importance; and the likely residual effects after these measures have been adopted.
- 8.1.2 The assessment takes into account current legislation, policy and technical guidance as well as the Emerging West Suffolk Local Plan which is currently under review and is expected to supersede the current legislation once adopted.
- 8.1.3 This Chapter should be read together with Chapters 1 to 5 of this ES.

8.2 Appendices

Table 8.1: Appendices for Chapter 8

Appendix No.	Document
8.1	Legislation, Policy and Guidance
8.2	Assessment Methodology - Protected Species Surveys
8.3	Drawings
8.4	Ecological Desk Study
8.5	Habitat Condition Assessment
8.6	Plant Species List
8.7	Fungi eDNA Survey Results - <i>to be issued</i>
8.8	Breeding Bird Survey Results – Detailed Application
8.9	Breeding Bird Survey Results – Hybrid Application
8.10	Ornithology Response Assessment
8.11	Stone-curlew Scoping Assessment
8.12	Automated/Static Survey Results
8.13	Badger Report – Confidential

8.3 Legislation, Policy and Guidance

8.3.1 Relevant legislation, policy and guidance is detailed within Appendix 8.1.

National Legislation

8.3.2 The national legislation that is of relevance to this biodiversity assessment is summarised below:

- Conservation of Habitats and Species Regulations 2017 (as amended)
- Wildlife and Countryside Act 1981 (as amended)
- Protection of Badgers Act 1992
- Natural Environment and Rural Communities Act 2006
- Environment Act 2021

National Policy

8.3.3 The National Planning Policy Framework 2025¹³ (the NPPF) sets out planning policy guidance to inform Local Plans set out by Local Planning Authorities.

Regional Policy

8.3.4 The Suffolk Local Biodiversity Action Plan, by the Suffolk Biodiversity Partnership¹⁴, sets out eight strategic actions to guide and assess county wide policy and strategic plans, monitoring of planning applications, and share information through seminars and training sessions. Following the publication of the UK Post-2010 Biodiversity Framework (2012) the UK BAP has been replaced by priority habitats and species; a full list of priority habitats and species for Suffolk has been published for consideration for conservation and enhancement at the local level¹⁵.

Local Policy

8.3.5 Local policy of relevance to this biodiversity assessment includes the following documents:

- West Suffolk Local Plan¹⁶ (currently under review and expected to supersede the current legislation once adopted). The Local Plan currently comprises the former Forest Heath

¹³ Ministry of Housing, Communities and Local Government (2025). National Planning Policy Framework.

¹⁴ Suffolk Biodiversity Partnership (May 2012). Suffolk Local Biodiversity Action Plan. http://www.suffolkbis.org.uk/sites/default/files/biodiversity/priorityspecieshabitats/actionplans/Planning_BAP_Final%2018%20May%202012.pdf

¹⁵ Suffolk Biodiversity Information Service (accessed February 2025). Priority species and habitats. <http://www.suffolkbis.org.uk/biodiversity/speciesandhabitats>

¹⁶ West Suffolk Council (accessed February 2025). Emerging West Suffolk Local Plan https://www.westsuffolk.gov.uk/planning/Planning_Policies/local_plans/ws-local-plan-review.cfm.

District Council (FHDC) area Local Plan Documents. Documents making up the current local plan include:

- Forest Heath Core Strategy (2010); and
- Joint Development Management Policies (2015).

Guidance & Industry Standards

- 8.3.6 The Office of The Deputy Prime Minister Circular 06/05¹⁷ is a document published to provide guidance on application of law relating to planning and nature conservation in England. Natural England also provides standing advice relating to legally protected species in England¹⁸.
- 8.3.7 Industry standards for competency required to carry out ecological surveys to establish baseline conditions are published by the Chartered Institute of Ecology and Environmental Management (CIEEM)¹⁹. Common industry best practice standards for ecological report writing²⁰ and ecological impact assessment are also published by CIEEM²¹.
- 8.3.8 Guidance for designing and implementing ecological avoidance, mitigation, compensation and enhancement measures is presented in BS42020²².
- 8.3.9 Best practice guidelines for surveys required to establish baseline conditions are followed and detailed in the relevant Annexes to this ES chapter.

8.4 Ecological Background Assessment

- 8.4.1 No previous ecological assessment is known to have been conducted on this Site prior to Sweco's engagement in 2023.

8.5 Assessment Methodology and Significance Criteria

- 8.5.1 The following section describes the methodology used to determine the likely significant effects on biodiversity as a result of the development.

¹⁷ ODPM (2005). Government Circular: Biodiversity and Geological Conservation – statutory obligations and their impact within the planning system.

¹⁸ Natural England and Department for Environment, Food & Rural Affairs. (accessed February 2025).

<https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications#standing-advice-for-protected-species>

¹⁹ CIEEM (accessed February 2025). Competencies for Species Surveys (CSS). <https://cieem.net/resource/competencies-for-species-survey-css/>

²⁰ CIEEM (December 2017). Guidelines for Ecological Report Writing. <https://cieem.net/resource/guidelines-for-ecological-report-writing/>

²¹ CIEEM (September 2018). Guidelines for Ecological Impact Assessment (EcIA). <https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/>

²² The British Standards Institution (2013). BS42020:2013: Biodiversity – Code of practice for planning and development

Scope of the Assessment and Technical Approach

8.5.2 The scope of the works and the potential significance of direct and indirect effects on protected species, designated sites and sensitive habitats is undertaken in accordance with the following standards and guidance with targeted surveys for protected species necessary as part of this assessment:

- Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) Guidelines for Ecological Impact Assessment (EcIA); and
- CIEEM (2021) Good Practice Guidance for Habitats and Species²³.

8.5.3 The published CIEEM guidelines follow an approach to valuing ecological features that involves the use of professional judgement, based on available guidance and information, together with advice from experts who know the area in which the study area sits and/or the distribution and status of the features that are being considered.

Extent of the Study Area

8.5.4 For the purposes of this assessment, the Zone of Influence (ZOI) is taken to be the area over which ecological features may be subject to change as a result of the Hybrid Application and any associated activities. This decision was made on the grounds that the Detailed Application lies entirely within the extent of the Hybrid Application and therefore any identified effects are likely to be applicable to both Planning Applications.

8.5.5 The ZOI varies depending on the ecological feature concerned and can extend beyond the site boundary. Where possible, ZOIs are determined using the results of professionally accredited or published scientific studies. Where such studies are not available, the ZOI is determined using the professional judgement of a suitably experienced and qualified ecologist. This is in line with professional guidelines²⁴.

8.5.6 The ZOI was generally taken to be the site boundary and its immediate environs, with the following exceptions:

- Statutory designated sites: the ZOI was considered as 10 km for internationally important statutory designated sites, 5 km for nationally and locally important designated sites and 2 km for ancient woodland. These distances were chosen based on best professional judgement;
- Non-statutory designated sites: Suffolk Biodiversity Information Service (SBIS) and Cambridge and Peterborough Environmental Records Centre (CPERC) records centre 2

²³ CIEEM (2021) Good Practice Guidance for Habitats and Species <https://cieem.net/wp-content/uploads/2021/05/Good-Practice-Guide-2023-edit.pdf>

²⁴ CIEEM (September 2018). Guidelines for Ecological Impact Assessment (EcIA). <https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/>

km ZOI was considered sufficient. This distance was chosen based on best professional judgement;

- Stone curlew (*Burhinus oedicnemus*): Royal Society for the Protection of Birds (RSPB) 2 km ZOI was considered sufficient for local stone curlew records with points taken from the far east of the site and far west of the site, given its total length is 1.2 km. This distance was chosen based on the RSPB stone curlew monitoring protocol (not publicly accessible outside of RSPB employment);
- Bats: SBIS and CPERC records centre standard 2 km ZOI was considered sufficient for local bat records. This distance was chosen based on Bat Conservation Trust (BCT) guidelines²⁵;
- GCN: a 500 m ZOI from the site boundary was considered sufficient, based on professional guidelines²⁶; and
- Badgers: a 30 m ZOI was considered sufficient, based on Natural England guidelines²⁷.

Baseline Data Collection

Desk Study

- 8.5.7 The Multi-Agency Geographic Information for the Countryside (MAGIC) online database was consulted to obtain geographic information on nationally and/or internationally important site designations, granted protected species licenses, ancient woodland and priority habitats from within a 5 km radius of the Site.
- 8.5.8 SBIS and CPERC were contacted for details of any non-statutory designations and records of protected/notable habitats and species within 2 km of the Site boundary. Only records of protected species from within the last 10 years are considered within this assessment.
- 8.5.9 Online mapping tools were used to check for the presence of any waterbodies within 500 m of the Hybrid Application Site boundary to inform an assessment of habitat availability and connectivity for GCN.

Preliminary Ecological Appraisal / Protected Species Scoping Survey

- 8.5.10 Sweco carried out an initial ecological desk study, UK Habitat Classification (UKHab) survey and protected species scoping survey in April 2024, to map the habitats present within the Application Sites boundary and assess their potential to support notable/protected species.

²⁵ Collins, J., *Bat Surveys for Professional Ecologists: Good Practice Guidelines*, 4th ed., J. Collins, Ed., London: The Bat Conservation Trust., 2023

²⁶ English Nature, *Great Crested Newt Mitigation Guidelines*, Peterborough: English Nature, 2001

²⁷ Natural England; DEFRA (2015). *Badgers: surveys and mitigation for development projects*. <https://www.gov.uk/guidance/badgers-surveys-and-mitigation-for-development-projects>.

Protected Species Surveys

8.5.11 Following the recommendations of the Preliminary Ecological Appraisal Report²⁸, the following protected species surveys were undertaken in 2024 - 2025, with specific methodology detailed within Appendix 8.2. Those surveys described as '*ongoing*' are due to be completed by October 2025:

- UKHab survey
- Fungi eDNA survey
- Breeding bird surveys
- Stone-curlew scoping assessment
- Bat surveys including:
 - Habitat suitability assessment
 - Preliminary roost assessment on buildings
 - Emergence surveys on buildings
 - Ground level tree assessment – *ongoing*
 - Aerial inspection on trees – *ongoing*
 - Emergence surveys on trees – *ongoing*
 - Automated/static surveys – *ongoing*
 - Night-time bat walkover survey – *ongoing*
- Badger walkover survey

8.5.12 During the above surveys, any incidental signs of other protected or notable species were recorded.

Identification of Sensitive Receptors

8.5.13 The important ecological features to be considered within the impact assessment were determined following the desk study, UKHab and protected species surveys.

8.5.14 The geographic level of importance of each of the features was assessed, as recommended within the CIEEM guidance on ecological impact assessment, using the criteria in Table 8.2 below.

²⁸ Sweco (2024). Preliminary Ecological Appraisal Report: Lanwades Woodland Park. Report Reference: 65210959-SWE-ZZ-XX-T-J-0002-C02.

Table 8.2: Assessment of Conservation Value of Ecological Features

Geographical Frame of Reference	Brief Description
International and European	<ul style="list-style-type: none"> • Habitats that meet criteria for Ramsar, SAC or SPA site. • A species present in internationally important numbers (>1% of international population). • Notable species which is part of the cited interest of an SPA or SAC and which regularly occurs in internationally or nationally important numbers.
National	<ul style="list-style-type: none"> • Habitats that meet criteria for SSSI or an important reserve to England. • A species present in nationally important numbers (>1% of UK population). • A species which is part of the cited interest of a SSSI and which regularly occurs in internationally or nationally important numbers. • Rare breeding species (e.g. birds with <300 UK breeding pairs).
Regional	<ul style="list-style-type: none"> • A local site with important regional habitats or significant populations of species of principal importance under the NERC act. • Species present in regionally important numbers (>1% of regional population). • Species listed as priority species, which are not covered above, and which regularly occur in regionally important numbers. • Sustainable populations of a species that is rare or scarce within a region. • Species on the BoCC Red List and which regularly occur in regionally important numbers.
County	<ul style="list-style-type: none"> • A local site with a habitat that is characteristic of the county or rare on a county scale, or with significant populations of locally important species. • Species present in county important numbers (>1% of county population). • Species listed as priority species, which are not covered above, and which regularly occurs in county important numbers • Sustainable populations of a species that is rare or scarce within a county. • A site designated for its county important assemblage of birds, reptiles, invertebrates, etc. • Species on the BoCC Red or Amber List and which regularly occur in county important numbers.

Geographical Frame of Reference	Brief Description
Local	<ul style="list-style-type: none"> • A site which has wildlife corridors likely to be essential to allow viable movement of species or improve the biodiversity of the area. • Species listed as priority species, which are not covered above, and are rare in the locality. • Species present in numbers just under county importance (<1% of county population). • Sustainable populations of a species that is rare or scarce within the locality. • A site whose designation is just under for inclusion for its county important assemblage of a particular species on site. • Other species on the BoCC Red or Amber List and which are considered to regularly occur in locally important numbers.

Assessment Modelling

- 8.5.15 An assessment of likely ecological impacts has been undertaken in accordance with CIEEM guidelines only where clear evidence is available to substantiate and justify the findings. In the absence of such evidence, the precautionary principal has been applied and the effect included as significant in the absence of evidence to the contrary. Following identification of the scale and magnitude of impacts, mitigation measures have then been proposed that are commensurate with the impacts identified. The impact assessment has then been reapplied to determine the scale of any residual impacts to each ecological receptor, to determine potential residual effects. Only those receptors for which effects are considered significant are carried through to the mitigation stage.

Significant Criteria

- 8.5.16 A level of significance has been assigned to each predicted effect. The geographic scale of the effects has been estimated on the same geographic scale as set out in Table 8.2 above. Where an ecological feature falls into more than one category of scale (e.g. a site designated at both the International and National level), then the highest category is always selected for evaluation purposes.
- 8.5.17 Activities likely to generate impacts on ecological receptors have been identified by considering the following:
- the design of the development;
 - desk study information;
 - field survey information; and
 - professional EIA experience and publications relating to similar projects/ schemes.
- 8.5.18 Activities likely to generate effects were then broadly categorised into the following:
- demolition of existing structures and construction; and

- operation of the development.

8.5.19 The assessment takes account of the effects of impacts on ecologically important features according to the following process:

- identifying and characterising impacts and their consequence;
- taking account of measures to mitigate for these impacts;
- assessing the significance of any residual effects after mitigation;
- identifying appropriate compensation measures to offset significant residual effects; and
- identifying opportunities for Biodiversity Net Gain (BNG).

Significance of Effects

8.5.20 In accordance with BS42020: 2013 and CIEEM guidelines, the effects for each identified impact on each relevant ecological feature have been described/categorised as follows:

- positive or negative;
- extent/magnitude (size/ amount/ intensity/ volume);
- complexity (direct, indirect, cumulative);
- duration (short, medium or long-term, permanent or temporary);
- reversibility (reversible or irreversible); and
- timing and frequency (considering seasonal / life cycle constraints).

Table 8.3: Criteria for Magnitude of Change and Nature of Effect on the Landscape and Typical Designations

Magnitude (change)	of effect	Typical description
Major	Adverse	Permanent/irreversible damage to a biodiversity resource. The extent, magnitude, frequency and/or timing of an impact negatively affects the integrity or key characteristics of the resource.
	Beneficial	Permanent addition of, improvement to, or restoration of a biodiversity resource. The extent, magnitude, frequency and/or timing of an impact positively affects the integrity or key characteristics of the resource.
Moderate	Adverse	Temporary/reversible damage to a biodiversity resource. The extent, magnitude, frequency and/or timing of an impact negatively affects the integrity or key characteristics of the resource.
	Beneficial	Temporary addition of, improvement to, or restoration of a biodiversity resource. The extent, magnitude, frequency and/or timing of an impact positively affects the integrity or key characteristics of the resource.
Minor	Adverse	Permanent/irreversible damage to a biodiversity resource. The extent, magnitude, frequency and/or timing of an impact does not affect the integrity or key characteristics of the resource.
	Beneficial	Permanent addition of, improvement to, or restoration of a biodiversity resource. The extent, magnitude, frequency and/or timing of an impact does

Magnitude (change)	of effect	Typical description
		not affect the integrity or key characteristics of the resource.
Negligible	Adverse	Temporary/reversible damage to a biodiversity resource. The extent, magnitude, frequency and/or timing of an impact does not affect the integrity or key characteristics of the resource.
	Beneficial	Temporary addition of, improvement to, or restoration of a biodiversity resource. The extent, magnitude, frequency and/or timing of an impact does not affect the integrity of key characteristics of the resource
No change		No observable impact, either positive or negative.

- 8.5.21 The level of impact upon ecological receptors is assessed as detailed in Table 8.4, below. Professional judgement has been used to categorise the level of impact of each activity as being 'major', 'moderate', 'minor', 'negligible' or 'no change' and 'adverse' or 'beneficial'.
- 8.5.22 Activities that are not considered to have any observable impacts (either positive or negative) upon an ecological receptor were not taken forward in the impact assessment process.

Table 8.4: Description of the significance of effect categories

		Level of impact				
		No change	Negligible	Minor	Moderate	Major
Resource importance	International or European importance	Neutral	Slight	Moderate or large	Large or very large	Very large
	UK or national importance	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Regional importance	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	County or equivalent authority importance	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Local importance	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

- 8.5.23 Impacts are defined as the changes resulting from an action and effects are defined as the consequences of these impacts. This section describes the assessment methodology for potential effects of development on the identified ecological receptors arising from construction and operation.

- 8.5.24 Impacts are considered in relation to identified biodiversity resources and are divided into two categories:
- construction activity impacts – includes those impacts which arise as a result of construction activities; and
 - operation impacts - includes those impacts which arise as a result of activities during use of the Site (such as bird mortality through traffic collisions).
- 8.5.25 Mitigation is deemed as being required where one or both of two criteria were met:
- I. The ecological resource is offered legal protection and a mandatory obligation is imposed to provide measures to ensure that an offence would not be committed (such as badgers and INNS); and/or
 - II. Because effects which are significant in EIA terms have been identified in the assessment process. Mitigation is proposed (where practicable) at the relevant scale of significance, using the following hierarchy: Avoidance, Mitigation, Compensation, Enhancement.
- 8.5.26 Residual effects take into consideration committed mitigation and design interventions.
- 8.5.27 Significant effects for the purposes of the EIA Regulations are defined as those of “moderate”, “large” or “very large” significance in accordance with Table 8.4 above.
- 8.5.28 Suitable mitigation measures have been recommended to:
- avoid negative ecological effects;
 - reduce negative ecological effects that cannot be avoided;
 - provide mitigation to offset effects; and,
 - deliver ecological enhancements to achieve net gains in biodiversity.
- 8.5.29 Assessments have been based on available literature and professional judgement as to whether the integrity (of a site or ecosystem) or the conservation status (of a habitat or species) is likely to be affected; in other words, whether the effect would be ‘significant’ in ecological terms.
- 8.5.30 ‘Integrity’ in relation to land lacking a designation or objectives for nature conservation is a long-term concept and defined as follows:
- ‘The integrity of a site is the coherence of its ecological structure and function, across its whole area that enables it to sustain the habitat, complex of habitats and/ or the levels of populations of the species that would be considered acceptably characteristic of the Site’.*
- 8.5.31 For habitats, conservation status:
- ‘... is determined by the sum of the influences acting on the habitat and its typical species that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area’.*

8.5.32 For species, conservation status:

‘... is determined by the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area’.

8.5.33 Each effect is then considered significant at the level at which the ecological receptor is important, combined with the scale at which the impact itself is likely to incur an effect. The ecological importance of a given receptor may not, therefore, be the same as the scale of effect significance.

8.5.34 Where ecological constraints to development are identified, mitigation measures that are proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the development are described. In addition, in accordance with the NPPF and the Environment Act 2021, opportunities for the provision of net gains in biodiversity are provided.

8.5.35 Where applicable, suitable monitoring or follow-up arrangements to determine whether mitigation has been successful and to specify appropriate remedial actions have been proposed. Lastly, residual effects are assessed using the aforementioned methods employed for the assessment of unmitigated impacts.

Stakeholder Consultation

8.5.36 The RSPB have been contacted with regards to stone-curlew data on 18 February 2025.

8.5.37 Natural England was consulted, via the Discretionary Advice Service, with regards to the Habitats Regulations Assessment and the need for stone curlew survey and mitigation.

8.6 Baseline Conditions

Designated Sites

8.6.1 A number of international, nationally and locally designated sites are located within the study area, which are presented in Table 8.5 below and shown in Appendix 8.4.

Table 8.5: Summary of Statutory Sites within the appropriate ZOI.

Site Name	Distance and Direction from Site	Description / Reason for Designation
International Designations		
Breckland SPA	2.2 km northeast	Article 4.1 qualification of breeding populations of: <ul style="list-style-type: none"> • A133 Stone curlew • A224 Woodlark (<i>Caprimulgus europaeus</i>) • A246 Nightjar (<i>Lullula arborea</i>)
Breckland SAC	7.4 km northwest	Qualifying features:

Site Name	Distance Direction and from Site	Description / Reason for Designation
		<ul style="list-style-type: none"> • 2330 Inland dunes with open <i>Corynephorus</i> and <i>Agrostis</i> grasslands • 3150 Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> – type Vegetation • 4030 European dry heaths • 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (important orchid sites) • 91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnionincanae</i>, <i>Salicion albae</i>) - qualifying feature but not a primary reason for site selection • 1166 Great crested newt (<i>Triturus cristatus</i>) - qualifying feature but not a primary reason for site selection
Fenland SAC	4.6 km northeast	<p>Qualifying features:</p> <ul style="list-style-type: none"> • H6410. Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>); Purple moor-grass meadows • H7210. Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>; Calcium-richfen dominated by great fen sedge (saw sedge) • S1149 Spined loach (<i>Cobitis taenia</i>) • S1166 Great crested newt
Chippenham Fen Ramsar	4.6 km northwest	<p>Ramsar criterion 1:</p> <ul style="list-style-type: none"> • A spring-fed calcareous basin mire with a long history of management, which is partly reflected in the diversity of present-day vegetation. <p>Ramsar criterion 2:</p> <ul style="list-style-type: none"> • The invertebrate fauna is very rich, partly due to its transitional position between Fenland and Breckland. The species list is very long,

Site Name	Distance Direction and from Site	Description / Reason for Designation
		<p>including many rare and scarce invertebrates characteristic of ancient fenland sites in Britain.</p> <p>Ramsar criterion 3:</p> <ul style="list-style-type: none"> The site supports diverse vegetation types, rare and scarce plants. The site is the stronghold of Cambridge milk parsley (<i>Selinum carvifolia</i>).
Devils Dyke SAC	8.3 km southwest	<p>Qualifying features:</p> <ul style="list-style-type: none"> H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (<i>Festuco - Brometalia</i>) (important orchid sites - lizard orchid (<i>Himantoglossum hircinum</i>)). Dry grasslands and scrublands on chalk or limestone (important orchid sites).
Rex Graham Reserve SAC	8.9 km northwest	<p>Qualifying features:</p> <ul style="list-style-type: none"> H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (<i>Festuco - Brometalia</i>) (important orchid sites - military orchid (<i>Orchis militaris</i>)). Dry grasslands and scrublands on chalk or limestone (important orchid sites).
National Designations		
Breckland Farmland SSSI	2.2 km northeast	This site is designated for a breeding stone curlew population.
Newmarket Heath SSSI	2.4 km southwest	The site is primarily comprised of lowland acid grassland, including the notified plant communities chalk grassland and neutral grassland. The grassland creates habitats for a diversity of wildlife, including species of interest such as the spotted flycatcher (<i>Muscicapa striata</i>) and an uncommon eyebright (<i>Euphrasia pseudokernerii</i>).
Red Lodge Heath SSSI	3.2 km north	This site is designated for its large invertebrate and vascular plant assemblages and is primarily comprised of lowland acid grassland. This site also supports a rare species, the five-banded weevil-wasp (<i>Cerceris quinquefasciata</i>).
Chippenham Fen and Snailwell Poor's Fen SSSI	4.6 km northwest	This site is designated for its assemblages of breeding bird invertebrates, and Cambridge milk-parsley. The site also primarily comprised of lowland fen, marsh and swamp habitat.

Site Name	Distance Direction and from Site	Description / Reason for Designation
Chippenham Fen NNR	4.7 km northwest	This site is designated for its large moth assemblage, breeding bird populations, including woodcock, snipe (<i>Gallinago gallinago</i>), and nine species of warbler and Cambridge milk-parsley. The calcareous fen conditions with frequent ditches, pools and wet depressions make this site a really diverse wetland habitat.
Snailwell Meadows SSSI	4.9 km northwest	This site is designated for the plant Cambridge milk-parsley and lowland valley fen habitat.
Local Designations		
Halfmoon Plantation Pit CWS	1.7 km north	The site supports the nationally rare plant species smooth rupturewort (<i>Herniaria glabra</i>) and a variety of nationally scarce species including lesser calamint (<i>Clinopodium calamintha</i>) and little bur clover (<i>Medicago minima</i>). The site also has an overall invertebrate index exceeding 500.
Barberry Hedge, Moulton CWS	1.7 km southeast	This site comprises a hedgerow (Priority habitat) containing barberry (<i>Berberis</i> sp.), guelder rose (<i>Viburnum opulus</i>) and hawthorn (<i>Crataegus monogyna</i>). The larvae of the barberry carpet moth (<i>Pareulype berberata</i>), which is nationally rare, depend on barberry as a food plant.
Moulton Churchyard, Footpath and Wood CWS	1.7 km southeast	This site includes both Moulton Churchyard and a small nearby woodland linked via a grass track. The churchyard supports areas of species-rich flora, including burnet-saxifrage (<i>Pimpinella saxifrage</i>), perforate St John's-wort (<i>Hypericum perforatum</i>) and ox-eye daisy (<i>Leucanthemum vulgare</i>). Clustered bellflower (<i>Campanula glomerata</i> , a species on Suffolk's Rare Plant Register) has also been previously recorded here. The wood itself, which is dominated by mature beech (<i>Fagus sylvatica</i>), also contains ash (<i>Fraxinus excelsior</i>), oak (<i>Quercus robur</i>), yew (<i>Taxus baccata</i>), holly (<i>Ilex aquifolium</i>) and sycamore (<i>Acer pseudoplatanus</i>), providing habitat opportunities for a range of wildlife, particularly birds and invertebrates.
Moulton Roadside Verge CWS	1.7 km southwest	This site is sits on light and chalky soils, and supports the nationally scarce lesser calamint (<i>Calamintha nepeta</i>).
The Limekilns and Adjacent Areas CWS	3.5 km southwest	This site supports upright brome (<i>Bromus erectus</i>) and crested dog's tail (<i>Cynosurus cristatus</i>) grasslands with black knapweed (<i>Centaurea nigra</i>).

International Statutory: Ramsar - wetlands of international importance, Ramsar convention. SPA - Special Protection Area, SAC - Special Areas of Conservation. **National Statutory:** SSSI - Site of Special Scientific Interest. NNR – National Nature Reserve. **Local Statutory:** LNR - Local Nature Reserve. Non-statutory: CWS – County Wildlife Site.

8.6.2 Designations that have good habitat connectivity to the Site, or whose qualifying features have the potential to make use of habitats present at the site, are considered potential constraints.

8.6.3 With regards to the SSSIs, all of the sites are located over 2 km away from the Site. These sites are designated for their rare habitats, such as calcareous grassland, acidic grassland, or the rare Cambridge milk parsley, none of which occur on the Site. Additionally, two sites are designated for rare breeding birds such as the pied flycatcher, woodcock, and snipe, none of which were recorded on site during surveys in 2024 (see below). The only SSSI potentially impacted is the Breckland Farmland SSSI. However, impacts to this site are addressed via the Habitats Regulations Assessment produced for both applications (which are submitted as standalone reports in support of the planning applications), as it is solely designated for stone curlew and shares the same footprint as the Breckland SPA. As such impacts to SSSIs are not considered further.

Priority Habitats

8.6.4 The following priority habitats were identified during the desk study, within 500 m of the Site:

- coastal and floodplain grazing marsh;
- lowland calcareous grassland;
- lowland meadows; and
- deciduous woodland (on site).

8.6.5 There were no parcels of ancient woodland within 500 m of the site.

Habitats on the Site

8.6.6 The results of the UKHab survey are presented below and shown in Appendix 8.3).

8.6.7 The following habitat types are present on site:

- other native hedgerows (h2a6);
- modified grassland (g4);
- modified grassland with scattered trees (g4 32);
- built-up areas and gardens; introduced shrub (u1 847);
- artificial unvegetated unsealed surface (u1c);
- buildings (u1b5);
- other developed land (u1b6);
- broadleaved mixed and yew woodland (w1); and
- lowland beech and yew woodland (w1c).

- 8.6.8 The habitats condition assessment is included as Appendix 8.5. Appendix 8.6 provides a list of plant species encountered for the habitats listed; as such for these plants scientific names are not provided below.

Modified grassland (g4)

- 8.6.9 The Site is dominated by modified grassland, particularly on the Western Parcel west. The majority of the grassland is well maintained and managed, with previous use as donkey grazing paddocks, with additional areas of amenity grassland associated with the built-up areas.
- 8.6.10 Various areas of this habitat were assessed as being in poor, moderate and good condition, due to variations in species-richness, sward height, scrub encroachment, physical damage, bare ground cover, and the presence of invasive species across the site and wider survey area.



Photo 1. View of modified grassland within the paddocks.



Photo 2. View of modified grassland within the paddocks.

Modified grassland; wood-pasture and parkland (g4 26)

- 8.6.11 There are scattered trees present within the modified grassland in the Western Parcel, which have potential to qualify this habitat as wood-pasture and parkland. Tree species included cedar (*Cedrus* sp.), beech (*Fagus sylvatica*), horse-chestnut (*Aesculus hippocastanum*), silver birch (*Betula pendula*), and pine (*Pinus* sp.), however none of these trees were considered veteran (another indicator of wood-pasture and parkland).
- 8.6.12 Further survey in the form of fungal eDNA testing has been undertaken to check that the fungal assemblage would not trigger a change in habitat classification. If the results of the eDNA survey do not confirm a diverse fungal assemblage, then this habitat will be classified as modified grassland with scattered trees in moderate condition (see below).

Modified grassland with scattered trees (g4 32)

- 8.6.13 There are scattered trees present within the modified grassland on site. Tree species included beech, horse-chestnut, silver birch, and pine.

8.6.14 This habitat was assessed as being in moderate condition.



Photo 3. View of scattered trees within the modified grassland.



Photo 4. View of scattered trees within the modified grassland.

Other native hedgerows (h2a6)

8.6.15 A few relatively short sections of native hedgerow were present on Site. The main species was beech with field maple, birch trees and young sycamore trees. As these hedgerows consisted entirely of native species. They are considered to be a priority habitat. However, they are not considered to be species rich, as they predominantly consisted of a single native species.

This habitat was assessed as being in poor condition.



Photo 5. View of hedgerow.



Photo 6. View of hedgerow.

Built-up areas and gardens; introduced shrub (u1 847)

8.6.16 There are a few small patches of non-native introduced shrub situated around buildings and hardstanding on site.

8.6.17 A condition assessment is not applicable for this habitat.



Photo 7. View of introduced shrubs.



Photo 8. View of introduced shrubs.

Artificial unvegetated, unsealed surface (u1c)

- 8.6.18 Access gravel tracks comprising artificial unvegetated, unsealed surface are present throughout the Site.
- 8.6.19 A condition assessment is not applicable for this habitat.



Photo 9. View of artificial unvegetated, unsealed surface access track.



Photo 10. View of artificial unvegetated, unsealed surface parking area.

Buildings (u1b5)

- 8.6.20 There are 33 buildings on the Hybrid Application Site, all of which were subject to preliminary bat roost assessment. Only the ones with bat roost potential are shown in Appendix 8.3).
- 8.6.21 A condition assessment is not applicable for this habitat.



Photo 11. Building with high bat roost suitability.



Photo 12. Building with high bat roost suitability.



Photo 13. Building with negligible bat roost suitability.



Photo 14. Building with low bat roost suitability.

Other developed land (u1b6)

8.6.22 Hardstanding, comprising roads and pavements, is present throughout the site.

8.6.23 A condition assessment is not applicable for this habitat.

Broadleaved mixed and yew woodland (w1)

8.6.24 Small areas of broadleaved mixed and yew woodland were present on site that did not meet the criteria for lowland beech and yew woodland.

8.6.25 This habitat was assessed as being in poor condition.



Photo 15. View of broadleaved mixed and yew woodland.



Photo 16. View of broadleaved mixed and yew woodland.

Lowland beech and yew woodland (w1c)

- 8.6.26 Areas of lowland beech and yew woodland were present throughout the site. This habitat is listed as a UK BAP Priority Habitat.
- 8.6.27 This habitat was assessed as being in poor condition.



Photo 17. View of lowland beech and yew woodland.



Photo 18. View of lowland beech and yew woodland.

Plants

- 8.6.28 SBIS and CPERC provided records of 21 notable plants from the 2 km data search. Non-native Spanish bluebell (*Hyacinthoides hispanica*) was recorded on site.
- 8.6.29 Habitats on site were not considered likely to support any rare or notable plant species, and therefore plants were not considered further within this report.

Fungi

- 8.6.30 The results of the fungi eDNA survey have not been issued at the time of writing, but will inform the need to reclassify grassland areas in the Western Parcel of the Site as modified grassland; wood-pasture and parkland (g4 26), as certain species are considered key elements of this habitat.
- 8.6.31 The results of the fungi eDNA survey will be presented in a supplementary submission to the Planning Applications, alongside details of any further mitigation required for this species group.

Invertebrates

- 8.6.32 There were no records of invertebrates from the CPERC 2 km data search.
- 8.6.33 SBIS provided 10 records of two notable butterfly species: small heath (*Coenonympha pamphilus*) and white-letter hairstreak (*Satyrus w-album*) from the 2 km data search.
- 8.6.34 Based on the initial habitat survey, and species recorded on Site, it is considered that the habitats present on site are likely to support a common assemblage of invertebrate species only, and whilst the woodland areas may support a greater diversity these areas are not being impacted. As such invertebrates are not considered further within this report.

Reptiles

- 8.6.35 There were no records of reptiles returned in the data searches.
- 8.6.36 Due to the well managed grasslands and maintained habitats within the Site and with the surrounding roads, arable land and residential bordering the site, habitat potential for reptiles is considered negligible.
- 8.6.37 Although considered unlikely to be present on Site, a precautionary approach to vegetation clearance has been recommended below to safeguard reptiles during construction.

Amphibians

- 8.6.38 CPERC provided no records of amphibian species from the 2 km data search. SBIS provided one record of GCN, 1.5 km south of the site.
- 8.6.39 MAGIC returned no records of GCN Class Survey Licence Returns that confirmed the presence of GCN or records of granted GCN protected species licences within 2 km of the site.
- 8.6.40 No waterbodies are present within 500 m of the Site, with the exception of the River Kennet over 400 m east of the Site (east of the B1085 road). Due to the lack of habitat connectivity to the site, it is considered unlikely GCN will be present on Site. In addition, the majority of the Site comprises well managed modified grassland, further reducing the likelihood of supporting GCN, and whilst the woodland provides suitable habitat for GCN, in the absence of any waterbodies to facilitate breeding, the site cannot support a population of GCN. As a result, GCN are not considered further in this report.

Birds

8.6.41 CPERC and SBIS provided 40 records of 21 species from within the 2 km search area. Notable species of relevance to the site comprise corn bunting (*Emberiza calandra*), dunnoek (*Prunella modularis*), golden plover (*Pluvialis apricaria*), house martin (*Delichon urbicum*), house sparrow (*Passer domesticus*), kestrel (*Falco tinnunculus*), red kite (*Milvus milvus*), rook (*Corvus frugilegus*), skylark (*Alauda arvensis*), spotted flycatcher (*Muscicapa striata*), starling (*Sturnus vulgaris*), swift (*Apus apus*), turtle dove (*Streptopelia turtur*) and yellow wagtail (*Motacilla flava*).

8.6.42 The scrub, hedgerows, scattered trees, and woodlands around the peripheries on site provide suitable breeding habitat for nesting birds on site.

Breeding bird surveys – Detailed Application Site

8.6.43 A total of 30 species were recorded within the Detailed Application Site (i.e. Eastern Parcel) and areas immediately adjacent during the breeding bird surveys carried out in accordance with best practice guidance. Only notable species have been included in Table 8.6 below, and their locations are shown within Appendix 8.8.

8.6.44 Notable species recorded included six amber-listed BoCC, two red-listed BoCC, three NERC species, and one species that is both Schedule 1 and BD Annex 1. Of these species, one was confirmed breeding, three were possibly breeding and two were probable breeding within the Eastern Parcel. The remaining species were considered unlikely to be breeding on site. The highest species count was observed during visit one (March) and the lowest was during visit four (May).

8.6.45 Over half the birds were common species associated with the woodland blocks, as well as hedgerows on Site, with 21 species classified as introduced or green listed BoCC and therefore not considered further in this report.

8.6.46 There were confirmed signs of breeding from rook (*Corvus frugilegus*), with multiple nests found within the woodlands around the Site.

8.6.47 The majority of the birds observed in the breeding survey were birds mainly associated with the woodland, trees and hedgerows, however, some were found within the central grassland of the site. Starlings were only observed during two survey visits on Site, with a large group of starlings recorded foraging within the grassland.

8.6.48 The remaining notable species recorded on Site are considered not breeding on Site and utilise the site for commuting and feeding purposes only.

8.6.49 Given the number of species recorded and the presence of notable species, the Site is considered to be of importance for breeding birds at the Local level.

Table 8.6: Breeding Bird Survey Results – Detailed Application Site

Common Name	Scientific Name	National Status	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6	Breeding Status
Dunnock	<i>Prunella modularis</i>	Amber BoCC NERC	0	1	0	0	0	0	Possible Breeding
Greenfinch	<i>Chloris chloris</i>	Red BoCC	1	0	0	0	0	0	Possible Breeding
Kestrel	<i>Falco tinnunculus</i>	Amber BoCC	0	0	0	0	1	0	Not Breeding
Red kite	<i>Milvus milvus</i>	Sch 1 BD Annex 1	0	1	0	0	0	0	Not Breeding
Rook	<i>Corvus frugilegus</i>	Amber BoCC	53	39	48	10	0	55	Confirmed Breeding
Starling	<i>Sturnus vulgaris</i>	Red BoCC NERC	28	0	0	9	0	0	Not Breeding
Song thrush	<i>Turdus philomelos</i>	Amber BoCC NERC	1	1	0	0	0	0	Possible Breeding
Woodpigeon	<i>Columba palumbus</i>	Amber BoCC	44	7	28	38	11	13	Probable Breeding
Wren	<i>Troglodytes troglodytes</i>	Amber BoCC	5	5	6	4	1	1	Probable Breeding

Sch 1 – Wildlife and Countryside Act 1981 (as amended) Schedule 1. **NERC** – Natural Environment and Rural Communities Act 2006 Section 41, species/habitats of principal importance. **BD Annex 1** – European Birds Directive, Annex 1. **BoCC Red** – Birds of Conservation Concern - Red listed. **BoCC Amber** – Birds of Conservation Concern - Amber listed.

Breeding bird surveys – Hybrid Application Site (Eastern Parcel and Western Parcel)

- 8.6.50 A total of 38 species were recorded within the Hybrid Application Site and areas immediately adjacent to it. Only notable species have been included in Table 8.7 below, and their locations are shown on in Appendix 8.3. The full results can be found in Appendix 8.9.
- 8.6.51 Notable species recorded included nine amber-listed BoCC, four red-listed BoCC, five NERC species, and one species that is both Schedule 1 and BD Annex 1. Of these species, one was confirmed breeding, six were possibly breeding and three probable breeding. The remaining species were considered unlikely to be breeding on site. The highest species count was observed during visit one (March) and the lowest was during visit five (June).

- 8.6.52 Over half the birds were common species associated with the woodland blocks, as well as hedgerows on site, with 24 species classified as introduced or green listed BoCC and therefore not considered further in this report.
- 8.6.53 The majority of the birds observed in the breeding survey were birds mainly associated with the woodland, trees and hedgerows, however some were found within the central grassland of the site. A large group of starlings were observed during one survey visit foraging within the grassland. Skylark was recorded within the paddock towards the very west of the Site on a single occasion, with the remaining skylarks being recorded off site to the south west, in the field adjacent to School Road. Due to the large amount of woodland both surrounding and dissecting the Site, which provides overwatch for a range of avian predators, as well as the presence of a rookery on Site, it is considered unlikely that skylark would breed on site.
- 8.6.54 The remaining notable species recorded on site are considered not breeding on site and utilise the Site for commuting and feeding purposes only.
- 8.6.55 Given the number of species recorded within the Site and the presence of limited numbers of notable species, the site is considered to be of important for breeding birds at the local level.

Table 8.7: Breeding Bird Survey Results – Hybrid Application Site

Common Name	Scientific Name	National Status	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6	Breeding Status
Curlew	<i>Numenius arquata</i>	Red BoCC NERC	0	1	0	0	1	0	Possible Breeding
Dunnock	<i>Prunella modularis</i>	Amber BoCC NERC	0	1	0	0	0	0	Possible Breeding
Greenfinch	<i>Chloris chloris</i>	Red BoCC	1	0	0	1	0	0	Probable Breeding
Kestrel	<i>Falco tinnunculus</i>	Amber BoCC	0	1	0	0	1	0	Not Breeding
Red kite	<i>Milvus milvus</i>	Sch 1 BD Annex 1	1	1	2	3	0	0	Not Breeding
Meadow Pipit	<i>Anthus pratensis</i>	Amber BoCC	3	0	0	0	0	0	Possible Breeding
Oystercatcher	<i>Haematopus ostralegus</i>	Amber BoCC	0	0	2	0	0	0	Possible Breeding
Redshank	<i>Tringa totanus</i>	Amber BoCC	0	0	0	0	1	0	Not Breeding

Common Name	Scientific Name	National Status	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6	Breeding Status
Rook	<i>Corvus frugilegus</i>	Amber BoCC	59	39	48	10	0	56	Confirmed Breeding
Skylark	<i>Alauda arvensis</i>	Red BoCC NERC	3	2	1	0	1	0	Not Breeding
Starling	<i>Sturnus vulgaris</i>	Red BoCC NERC	28	0	0	9	0	0	Not Breeding
Song thrush	<i>Turdus philomelos</i>	Amber BoCC NERC	1	1	1	0	0	0	Possible Breeding
Woodpigeon	<i>Columba palumbus</i>	Amber BoCC	92	91	114	47	13	16	Probable Breeding
Wren	<i>Troglodytes troglodytes</i>	Amber BoCC	13	9	9	11	3	2	Probable Breeding

Stone Curlew

- 8.6.56 No stone curlews were recorded on or in the immediate vicinity of the Site during the six-visit breeding bird survey undertaken by Sweco in 2024.
- 8.6.57 SBIS provided no records of stone curlew within 2 km of the Site boundary.
- 8.6.58 The RSPB returned two records of stone curlew from within the 2 km-radius search areas around the eastern and western ends of the Site. The two records date from 2015 and 2024 and both are located over 1.65 km from the Site boundary. The earlier record is located over 1.75 km away, north of the A14; the more recent record is located 1.65 km away, to the east of Gazley Road. Both records fall within the 1.5 km buffer of the Breckland SPA. The small number of stone curlew records held by the RSPB from within the past 10 years suggests that whilst the RSPB are monitoring the areas around the Site, they are not frequently used by this species.
- 8.6.59 Sweco's desk-based assessment of habitats within the Site and land within a 1.5 km buffer around it concluded that, whilst there was arable land and grassland present, much of this was in close proximity to built-up environments, actively used for horses, or located adjacent to suboptimal features such as woodlands, which provide overwatch for a range of avian predators. As such, both the site and the surrounding areas were considered largely unsuitable to support this species. The full report is appended to this report (Appendix 8.10).

- 8.6.60 The field assessment undertaken by Wild Frontier Ecology Ltd of all land within 1.5 km of the Site concluded that the habitats present do not offer suitable habitat for stone curlew. The full report is appended at Appendix 8.11).
- 8.6.61 The RSPB stone curlew monitoring protocol²⁹ is not publicly accessible outside of RSPB employment and the Bird Monitoring Methods guidance, which outlines detailed survey techniques for specific rare species in the UK does not provide any methodology to survey for Stone curlews. As such it is not possible to compare the stone curlew methodology with the breeding bird survey methods used on site, however it is still considered likely that, were stone curlew present, they would have been detected during the six visits undertaken on Site as part of the breeding bird surveys.
- 8.6.62 Given the above, impacts on stone curlew are not anticipated as a result of the development and this species is not considered further in this report.

Bats

- 8.6.63 CPERC provided seven records of seven bat species from within the 2 km search area, including brown long-eared (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*), Leisler's noctule (*Nyctalus leisleri*), noctule (*Nyctalus noctula*), serotine (*Eptesicus serotinus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and barbastelle (*Barbastella barbastellus*).
- 8.6.64 SBIS provided 10 records of at least three species within the 2 km data search, including common pipistrelle, soprano pipistrelle and brown long-eared.
- 8.6.65 Three granted bat mitigation licences were identified on MAGIC within 2 km, the closest being 0.85 km from the Site and relating to the destruction of a common pipistrelle resting place.

Habitat Suitability Assessment

- 8.6.66 The hedgerows, scattered trees, and woodlands all provide suitable foraging and commuting habitat for bats on Site, however the wider landscape is primarily comprised of arable land, with few woodland blocks in the surrounding area to connect to. Therefore, the Detailed Application Site (Eastern Parcel) has been classified as having low suitability habitat for foraging and commuting bats.
- 8.6.67 The Site consists exclusively of mature woodland blocks and grassland paddocks and as such the Site as a whole is considered to have moderate suitability for foraging and commuting.

Preliminary Roost Assessment - Buildings

²⁹ RSPB. Stone curlew monitoring protocol.

- 8.6.68 Five buildings on site supported PRFs and therefore one building has been classified as having high bat roosting potential, three buildings have been classified as moderate potential, and one building has been classified as negligible potential as shown on Table 8.8 below. The locations of these buildings are shown in Appendix 8.3.

Table 8.8: Preliminary Roost Assessment of Buildings on Site

Building ref.	External roosting evidence and/or potential roost features	Roost suitability
B1	Brick building with a slate tile roof. Potential roost features all around the building included missing mortar gaps in the roof and brick, missing and ridge tiles.	High
B2	Brick building with slate tile roof, and roofing felt. Included pitched and flat roof sections. Potential roost features on north side of the building included mortar gaps above the garage door, gap under the fascia / soffit, and missing mortar.	Moderate
B3	Very dilapidated stone and brick building, with corrugated steel. Wooden beams present in the roof. Many potential roost features.	Moderate
B4	Dilapidated single storey, brick building, with corrugated steel roof. Many potential roost features.	Moderate
B5	Brick building with slate tiles. Open windows and holes in soffit box on north and south side of the building. During a breeding bird survey in May, it was noted that the windows into each sealed stable had been closed and therefore downgraded to Negligible.	Low and then downgraded to Negligible

Emergence Surveys – Buildings

- 8.6.69 The emergence survey results for buildings B2, B3, and B4 are provided in Table 8.9 below (see Appendix 8.3 for the locations). B1 is going to be retained and will have internal renovations, but these will not result in changes to the loft spaces and areas where bats could roost. As such, emergence surveys were not conducted.
- 8.6.70 No bats were observed emerging from or re-entering the building and it is therefore considered that the building does not support a bat roost.

Table 8.9. Results of Emergence Surveys

Survey No.	Results
1	No emergences. Calls were recorded from foraging and commuting bats including noctule, serotine and common pipistrelle.
2	No emergences. Calls were recorded from foraging and commuting bats including brown long-eared, noctule, serotine and common pipistrelle.

Ground Level Tree Assessment

- 8.6.71 During the GLTAs undertaken, a total of 183 trees were found to support PRFs within the Detailed Application Site (Eastern Parcel). Of these, 88 trees were classified as FAR, 29 as PRF-I and 66 as PRF-M. The tree locations are shown in Appendix 8.3.
- 8.6.72 During the same GLTA, a total of 359 trees were found to support PRFs within the Hybrid Application Site. Of these, 128 trees were classified as FAR, 86 as PRF-I and 145 as PRF-M. One bat box was recorded in one of the trees considered PRF-M. The tree locations are shown in Appendix 8.3.

Tree Scoping Exercise

- 8.6.73 A bat-sensitive lighting strategy will be implemented in line with Guidance Note 08/23 produced by the BCT and the Institute of Lighting Professionals (ILP)³⁰, to avoid disturbance impacts to key habitats (i.e. the woodland belts) and any PRF trees associated with those habitats. This will reduce the need for a number of aerial climbing surveys.
- 8.6.74 With respect to avoiding lighting impacts to key habitat features, Guidance Note 08/23 suggests that the following measures are considered:
- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used;
 - LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability;
 - A warm white light source (2700 Kelvin or lower) should be adopted to reduce blue light component;
 - Light sources should feature peak wavelengths higher than 550 nm to avoid the component of light most disturbing to bats;
 - Internal luminaires should be recessed (as opposed to using a pendant fitting) where installed in proximity to windows, to reduce glare and light spill;
 - Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges;
 - Column heights should be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards;
 - Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered;

³⁰ Ferguson, Joanna & Fox, Harry & Smith, Nick & Brookes, Bonnie & Vongpraseuth, Marcus & Levine, Cody & Morton, Stuart & Miles, James & Harrison, Peter & Harding, Guy & Bolt, Emily & Howard, Allan. (2023). 'Bats and Artificial Lighting at Night' Guidance Note GN 08 23: <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>.

- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt;
- Where appropriate, external security lighting should be set on motion sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1 or 2 minute timer is likely to be appropriate;
- Use of a Central Management System (CMS) with additional web-enabled devices to light on demand;
- Use of motion sensors for local authority street lighting may not be feasible unless the authority has the potential for smart metering through a CMS;
- The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination efficiency, unacceptable upward light output, increased upward light scatter from surfaces and poor facial recognition which makes them unsuitable for most sites. Therefore, they should only be considered in specific cases where the lighting professional and project manager are able to resolve these issues; and
- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely.

8.6.75 The lighting strategy (which can be controlled via a planning condition) will implement all of the above recommendations to ensure that key bat habitats at the Site, in particular the woodland belts, do not experience lux levels above 0.2 lux on the horizontal plane and 0.4 lux on the vertical plane, where there is currently no lighting; and do not experience any increase in lighting of more than 0.2 lux on the horizontal plane and 0.4 lux on the vertical plane where there is existing lighting on site.

8.6.76 The bat-sensitive lighting strategy reduces the number of PRF trees within the Detailed Application Site (Eastern Parcel) from 183 to 102, and the number of PRF trees within the Western Parcel of the Hybrid Application Site from 359 to 201.

8.6.77 As stated above within the methodology section (see Appendix 8.2), all remaining trees identified as FAR, PRF-I or PRF-M will be subject to a single aerial inspection survey (or ladder-based inspection, where appropriate) in 2025, the aim of which will be to ensure that all trees are either correctly assigned to PRF-I or PRF-M, or removed from the scope of assessment. Once these trees are correctly classified, any further roost characterisation surveys that are necessary to inform a mitigation licence application will be undertaken (May-September for PRF-I; May-August for PRF-M). This information will be submitted as supplementary information to support the findings of this assessment.

Automated/Static Surveys

8.6.78 For the Detailed Application Site (Eastern Parcel), the results from each automated/static survey period are summarised within tables in Appendix 8.12 and shown within charts included as Figure 8.1, Figure 8.2 and Figure 8.3 below.

- 8.6.79 At least seven bat species were recorded: common pipistrelle, soprano pipistrelle, noctule, serotine, barbastelle, *Myotis* sp. and brown long-eared bat.
- 8.6.80 During the spring monitoring period, the recordings were dominated by common pipistrelle, however a few calls from soprano pipistrelle and serotine were also recorded. During the summer monitoring period, calls of common pipistrelle, soprano pipistrelle, noctule, serotine, a *Myotis* species and brown long-eared bat were recorded. During the autumn monitoring period, fewer calls were recorded, but these includes calls of common pipistrelle, soprano pipistrelle, noctule, serotine, brown long-eared and barbastelle.
- 8.6.81 99% of the calls recorded across all three survey periods were from common pipistrelle bats.
- 8.6.82 Soprano pipistrelles and serotine were recorded during all three survey periods, with a total of 17 calls recorded, suggesting that species is an infrequent visitor to the Detailed Application Site.
- 8.6.83 Noctule bats were recorded during the summer and autumn survey periods. They were recorded on most nights, with a total of 80 calls, 72 of which were recorded during the second monitoring period (Summer).
- 8.6.84 Brown long-eared bats were also recorded during the summer and autumn survey periods. Only 11 calls were recorded, suggesting that this species is an infrequent visitor to the Detailed Application Site (Eastern Parcel).
- 8.6.85 Serotines were recorded during all three automated/static survey periods, with a total of 64 calls recorded. The results suggest that serotine bats are frequent visitors to the Detailed Application Site.
- 8.6.86 Barbastelle was recorded during the summer and autumn survey periods, with a total of 8 calls recorded. This suggests that barbastelles are an infrequent visitor to the Detailed Application Site only.
- 8.6.87 A *Myotis* species bat was recorded during the summer survey period, with a total of 2 calls recorded, which

suggests that this species is an infrequent visitor to the Detailed Application Site.

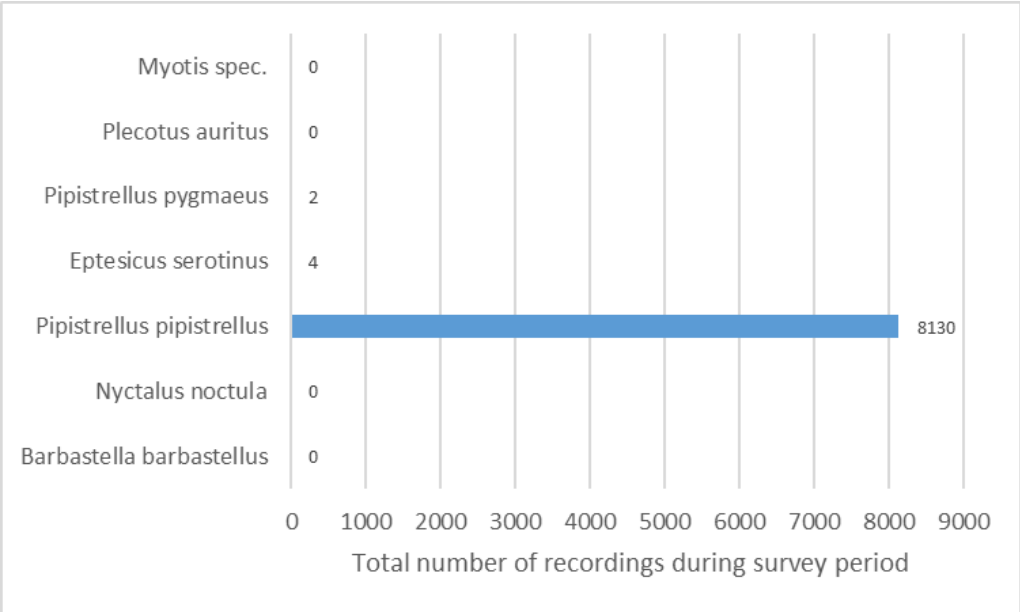


Figure 8.1. Chart Showing Automated/Static Survey Results – Spring 2024

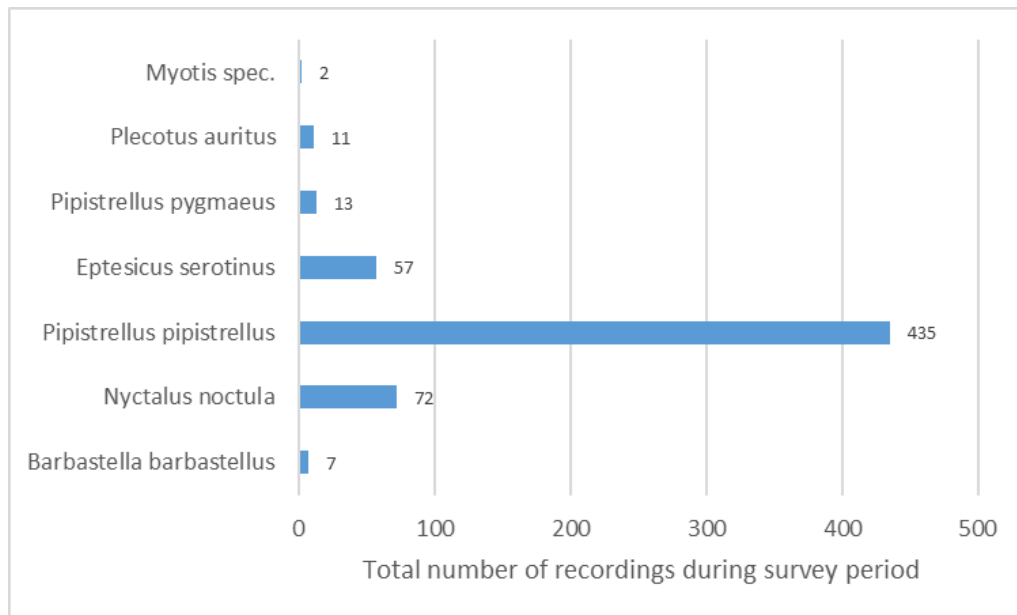


Figure 8.2. Chart Showing Automated/Static Survey Results -Summer 2024

- 8.6.88 Detailed monitoring will be undertaken in 2025 for the Hybrid Application Site, with the results presented in a supplementary submission.

Night-time Bat Walkover Survey

- 8.6.89 NBW surveys will be undertaken in spring, summer and autumn 2025. The findings of these surveys will be presented within an supplementary submission.

Water Vole

- 8.6.90 There were no records of water vole (*Arvicola arvensis*) returned in the data searches.
- 8.6.91 There is no suitable habitat for water voles on Site as such this species is not considered further within this report.

Otter

- 8.6.92 CPERC provided no records of otter (*Lutra lutra*) from the 2 km data search. SBIS returned one record of otter in the 2 km data search, which was recorded on Site.
- 8.6.93 Given the distance to the nearest watercourses/the absence of watercourses in the local area, it is considered that the site is unlikely to be suitable to support otter. Therefore, this species is not considered further within this assessment.

Hazel Dormouse

- 8.6.94 There were no records of hazel dormouse (*Muscardinus avellanarius*) returned in the data searches.
- 8.6.95 The hedgerows on Site are primarily small and thin and are therefore not considered suitable to support these species. Although there is some coppiced hazel on Site, there was no evidence that this management routine has been continued in recent years. The woodlands where this was present lack wider landscape connectivity. Therefore, this species is not considered further within this assessment.

Badger

- 8.6.96 CPERC provided no records of badger from the 2 km data search. SBIS provided two records of badger in the 2 km data search, both of which were from the Site.
- 8.6.97 Surveys have confirmed the presence of badgers on the Hybrid Application Site. Details of all badger surveys undertaken to date at the Hybrid Application Site are presented in a separate report (Appendix 8.13), which has had sensitive information redacted for upload to the public domain.

Hedgehog

- 8.6.98 CPERC provided no records of hedgehog (*Erinaceus europaeus*) from the 2 km data search. SBIS provided 22 records of hedgehog within the 2 km data search, six of which were recorded on Site.
- 8.6.99 There is potential for the woodland, grassland and hedgerow habitat to support hedgehogs on Site.

Brown Hare

- 8.6.100 CPERC provided one record of brown hare (*Lepus europaeus*) in the 2 km data search.
- 8.6.101 SBIS provided three records of brown hare in the 2 km data search, two of which were recorded on Site.
- 8.6.102 This species was recorded utilising the Site during several survey visits, especially within the grassland areas.

Invasive Non-native Species

- 8.6.103 CPERC provided no records of invasive non-native species from the data search. SBIS provided no records from within the 2 km data search.
- 8.6.104 Variegated yellow archangel (*Lamium galeobdolon argentatum*) was found on site, occupying much of the woodland ground flora in the location shown on Figure 8.4 below.



Figure 8.4. Location of the variegated yellow archangel within the site (blue square). Map data from Google 2025: Bluesky, CNES / Airbus, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies

Stakeholder Consultation

- 8.6.105 The RSPB returned no records of nesting stone curlew within 1.5 km of the Application Site and provided a confirmation letter of zero records on 22 April 2025. Full details are presented within Appendix 8.11
- 8.6.106 Natural England considered that the development will not impact the nearby designated sites and their qualifying features. Full detailed are presented within the Habitats Regulations Assessment reports prepared for both Application Sites (which are submitted in support of the planning applications as standalone documents).

Local Knowledge

- 8.6.107 As detailed within the methodology section above, Sweco undertook a local biological records search, alongside online data searches to identify local knowledge within the zone of influence. Results of this are reported in the desk study and species sections above.

8.7 Identified Sensitive Receptors

8.7.1 This section includes the valuation of ecological features considering all baseline conditions to identify important ecological features. The assessment criteria are detailed in Table 8.3 above. A summary of the valuation of ecological features relevant to the Detailed Application Site is provided in Table 8.10 below.

Detailed Application (Eastern Parcel)

Table 8.10 Summary of Valuation of Ecological Features on the Eastern Parcel

Ecological Feature	Importance Valuation	Rationale
Breckland SPA Chippenham Fen Ramsar Fenland SAC	International	Designated sites of international conservation value.
Non-statutory Sites	Local	Designated sites of local conservation value.
Lowland Beech and Yew Woodland (Priority Habitat) Mature and Veteran Trees	Local	Not important for their vegetation community, as all woodland planted with high proportion of exotic species, with little developed understory. Important dark corridors used as commuting, foraging and roosting habitat for bats. Presence of veteran trees.
Reptiles	Not important at the local level	Habitat suitable for widespread reptiles.
Birds	Local	One WCA Schedule 1 species, two red-listed BoCC, six amber-listed BoCC, and three Section 41 species of principal importance were recorded.
Roosting Bats	<i>To be determined following 2025 surveys.</i>	No roosts recorded within the buildings. Further assessment is required for all trees to be impacted.
Foraging and Commuting Bats	Local	One 'rarest' (barbastelle), three 'rarer' (noctule, serotine, and <i>Myotis</i> sp.) and three 'common' (common pipistrelle, soprano pipistrelle and brown long-eared) bats were detected using habitats on site for foraging and commuting.
Badger	Local	Badgers make use of the Detailed Application Site. Survey details are reported in Appendix 8.B, which has had sensitive information redacted for upload to the public domain.
Hedgehog	Not important at the local level	Habitat suitable for hedgehogs.
Brown Hare	Not important at the local level	Brown hare was recorded within the central grassland areas.
Invasive species	Not important at the local level	Legal requirement to avoid causing the spread of a Schedule 9 invasive species.

8.7.2 A summary of the valuation of ecological features relevant to the Hybrid Application Site is provided in Table 8.11 below.

Hybrid Application (Detailed Application for 300 Units Plus Outline Application for 600 Units + Care Home + School)

Table 8.11. Summary of Valuation of Ecological Features on Hybrid Application Site

Ecological Feature	Importance Valuation	Rationale
Breckland SPA Chippenham Fen Ramsar Fenland SAC	International	Designated sites of international conservation value.
Non-statutory Sites	Local	Designated sites of local conservation value.
Lowland Beech and Yew Woodland (Priority Habitat) Mature and Veteran Trees	Local	Not important for their vegetation community, as all woodland planted with high proportion of exotic species with little developed understory. Important dark corridors used as commuting, foraging and roosting habitat for bats. Presence of veteran trees.
Fungi	<i>To be determined following 2025 surveys.</i>	Fungi eDNA surveys have been conducted in the western grassland areas to determine if the priority habitat wood-pasture and parkland is present on site.
Reptiles	Not important at the local level	Habitat suitable for widespread reptiles.
Birds	Local	Nine amber-listed BoCC, four red-listed BoCC, five NERC species, and one species that is both Schedule 1 and BD Annex 1 were recorded
Roosting Bats	<i>To be determined following 2025 surveys.</i>	No roosts recorded within the buildings. Further assessment is required on trees to be impacted.
Foraging and Commuting Bats	<i>To be determined following 2025 surveys.</i>	One 'rarest' (barbastelle), three 'rarer' (noctule, serotine, and <i>Myotis</i> sp.) and three 'common' (common pipistrelle, soprano pipistrelle and brown long-eared) bats were detected using habitats on east site for foraging and commuting. Monthly automated/static surveys will be conducted across the Hybrid Application Site from April to October 2025.
Badger	Local	Badger are present at the Hybrid Application Site. Survey details are reported in Appendix 8.B, which has had sensitive information redacted for upload to the public domain.
Hedgehog	Not important at the local level	Habitat suitable for hedgehogs.
Brown Hare	Not important at the local level	Brown hare was recorded within the central grassland areas.

Ecological Feature	Importance Valuation	Rationale
Invasive species	Not important at the local level	Variegated yellow archangel present.

8.8 Assessment of Effects, Mitigation and Residual Effects

8.8.1 This section presents an overview of mitigation measures proposed in response to the impacts identified. The purpose of these measures is to avoid or reduce the ecological effects associated with the construction and operation of the developments and to maximise benefits. Mitigation measures employed to reduce the impact of the applications on ecological receptors as outlined in CIEEM guidance have followed a hierarchical system:

- avoidance and prevention: design and mitigation measures to prevent the effect (for example, alternative design options or avoidance of environmentally sensitive sites);
- reduction: where avoidance is not possible, then mitigation is used to lessen the magnitude or significance of effects; and
- remediation: where it is not possible to avoid or reduce a significant adverse effect, these are measures to offset the effect by compensation or enhancement.

8.8.2 Mitigation and enhancement measures are split into the construction and operation phases.

Site Enabling, Demolition and Construction

8.8.3 The potential impacts which may arise during construction are largely the same for both applications. These stages include:

- Site clearance and the land take of habitats, including areas of the woodland (priority habitat) and demolition of buildings;
- Creation of barriers along habitats decreasing site connectivity and increasing fragmentation;
- Damage to root systems of hedgerows and trees;
- Severance of wildlife corridors;
- Direct and indirect impact on protected species;
- Deterioration of quality of commuting and foraging habitat for bats, resulting in the reduction in numbers of rarer species of bats;
- Loss of commuting and foraging habitats for breeding bird species due to fragmentation of the site and severance of linear biodiversity resources such as hedgerows;
- Increased atmospheric, noise and light pollution during construction; and
- Noise and visual disturbance of sensitive ecological features within and adjacent to the construction footprint.

8.8.4 Mitigation measures for the Detailed Application Site (Eastern Parcel) are summarised below and in Tables 8.12 (construction) and 8.16 (operation) with the Hybrid application covered beneath that in Tables 8.14 (construction) and 8.17 (operation).

Mitigation Measures - Detailed Application (Eastern Parcel)

Breckland SPA, Chippenham Fen Ramsar, Fenland SAC

- 8.8.5 Impacts on internationally important sites have been addressed within the Habitats Regulations Assessment (which is submitted in support of the planning applications as a standalone document). All construction phase impacts identified have been screened out.
- 8.8.6 The development is expected to have a neutral impact on the relevant internationally important sites.

Non-statutory Sites

- 8.8.7 These include Halfmoon Plantation Pit CWS, Barberry Hedge, Moulton CWS, Moulton Churchyard, Footpath and Wood CWS, and Moulton Roadside Verge CWS. They are located approximately 1.7 km south of the Site, around the village of Moulton. These sites are designated for their local wildlife value, with some rarer species present. The application will not result in any direct impacts on these sites. While the woodland in Moulton Churchyard may share some similar species with these areas, there is no functional linkage between them. It is further considered highly unlikely that these sites would depend on the habitat within the Detailed Application Site (Eastern Parcel).
- 8.8.8 The development is expected to have a neutral impact on the non-statutory sites.

Lowland Beech and Yew Woodland and Mature Trees

- 8.8.9 Most of the mature trees onsite and within the woodland are to be retained and measures will be implemented to protect and retain these trees. Where removal is required, replanting will take place to offset the loss of individual trees.
- 8.8.10 In accordance with British Standard 5837 Trees in Relation to Design, Demolition and Construction [24] care should be taken to avoid impacts on any mature trees. Where the trees are not directly impacted by the works, care will need to be taken to avoid adverse impacts to the root systems of these trees during the works and to avoid damaging branches with machinery. During site clearance and construction, the trees to be retained will be protected from damage with Heras fencing erected around the root protection zone of these trees. In addition, the findings and recommendations outlined within the Hayden's Arboricultural Consultants Ltd Tree Survey and Arboricultural Impact Assessment (AIA), which is submitted in support of the planning applications as a standalone document) should be adhered to during the demolition and construction works.
- 8.8.11 The development is expected to have a slight negative impact on the lowland beech and yew woodland and mature trees.

Veteran Trees

- 8.8.12 As above veteran trees are being retained and will be protected as detailed at 8.8.11. above, however a single veteran tree will potentially be impacted by the development (marked as T330 within the AIA report).

The tree is located at the edge of a woodland block adjacent to existing paddocks and is currently leaning towards the paddock. It comprises a large wound feature with multiple cavities from the base up the main trunk. The AIA confirms that there is structural root failure and a fungal infection present. In order to retain the tree, removal of the upper canopy is required to stabilise the tree and prevent it from falling over. This will result in the loss of some parts of the tree due to pruning; however, the tree will be retained.

- 8.8.13 An arboricultural management plan will be produced covering the maintaining and protecting the woodlands during both the construction and operational phases. This comprehensive plan will outline strategies to safeguard and enhance the retained veteran trees, ensuring they continue to thrive and provide ecological benefits.
- 8.8.14 The development is expected to have a minor negative impact on veteran trees where trees must be removed.

Reptiles

- 8.8.15 The Detailed Application Site (Eastern Parcel) is under regular management. As such the grassland, hedgerows and woodland margins provide limited suitable habitat for reptiles. The development will result in the loss of the grassland and hedgerows habitats, and some of the works are required along the woodland margins. While the habitats are largely unsuitable, it is considered that low numbers of individual reptiles may be present on site, and therefore there is risk that construction works could result in the killing or injury of reptiles.
- 8.8.16 As such a precautionary method of works for clearing habitat suitable for reptiles will be produced. This will include phased vegetation clearance and careful dismantling of any potential refuges under the supervision of an Ecological Clerk of Works (ECoW), hand searches by the ECoW during vegetation clearance and supervised topsoil stripping. Tool-box talks will be given by the on-site ECoW to contractors ahead of works. Any reptiles found will be moved into areas of suitable retained habitat away from the works areas.
- 8.8.17 Site clearance (excavation of areas of suitable habitat) will be undertaken when reptiles are active during March to October inclusive, during suitable weather (dry with air temperature above 9 °C), with all excavations either covered at night, or fitted with a timber escape ramp so that animals can climb out.
- 8.8.18 The development is expected to have neutral impact on reptiles.

Breeding Birds

- 8.8.19 Vegetation clearance works are to take place outside of the bird nesting season (March-August inclusive), where possible. If any clearance is to be undertaken during the nesting season, the areas to be cleared would be checked by an ECoW immediately prior to clearance. Any active nests will be protected by a suitable no-works buffer until any chicks have fledged or a suitably qualified ecologist has confirmed the nest is no longer active.

- 8.8.20 Habitat creation will include other neutral grassland, scrub, woodland, trees and a hedgerow which will include native fruited and berry producing species as well as mixed flowering species to ensure that there is improved foraging capacity on site for birds during winter and in the summer.
- 8.8.21 To help mitigate for the loss of nesting opportunities resulting from clearance of vegetation, seven general purpose bird boxes will be installed on trees and eight swift boxes will be installed on buildings. Boxes will be constructed from long-lasting materials (e.g. woodcrete, or recycled plastic) to maximise their lifespan.
- 8.8.22 The development is expected to have a neutral impact on breeding birds.

Roosting Bats

- 8.8.23 No bats were recorded utilising the buildings and therefore these can be demolished. The results are considered valid until April 2026. If works have not commenced, the emergence surveys of the buildings will have to be updated. B1 is going to be retained with some internal renovations and therefore emergence surveys were not conducted of this building. However, if this changes and works are required in the roof spaces of B1 or if the building will be subject to construction works and disturbance, including lighting, emergence surveys of this building will be required.
- 8.8.24 A bat-sensitive lighting strategy in line with Guidance Note 08/23 produced by the BCT and the ILP, will be implemented to avoid disturbance impacts to key habitats (i.e. the woodland belts) and any PRF trees associated with those habitats. The lighting strategy will ensure that key bat habitats do not experience lux levels above 0.2 lux on the horizontal plane and 0.4 lux on the vertical plane, where there is currently no lighting; and do not experience any increase in lighting of more than 0.2 lux on the horizontal plane and 0.4 lux on the vertical plane where there is existing lighting on Site.
- 8.8.25 Following completion of the 2025 tree scoping exercise (see 8.5.42. above) to confirm the total number of PRF-I and PRF-M trees to be affected by pruning or felling, all PRF-I and PRF-M trees will be subject to aerial or ladder-based inspection, as appropriate, in May-July. For PRF-I trees with bat roosting evidence (where the type of roost is not immediately obvious), and PRF-M trees, roost characterisation surveys will be undertaken to determine the species and number of bats present. This information will be used to inform a mitigation licence application to Natural England.
- 8.8.26 In addition to mitigating for any known roosts identified during the roost characterisation surveys, a so-called 'roost resource' approach will be adopted for the bat mitigation licence, whereby a likely worst case scenario of potential bat roosts will be agreed with Natural England to facilitate the lawful removal of all PRF trees that are to be affected by pruning or felling, under a precautionary method of works. Appropriate mitigation will be put in place to ensure no net loss of the available roost resource. This will avoid delays resulting from the unexpected finding of bats in PRF trees during the pruning/felling works.
- 8.8.27 The landscaping will be designed to provide increased foraging opportunities, especially around the proposed basin to the north, where pollen and nectar mixes will ensure increased invertebrate numbers for bats to feed on, this should offset the minimal loss of modified grassland and hedgerow found around the existing buildings.

- 8.8.28 Based on the survey data available at the time of writing, the large number of PRF trees that are to be retained and not impacted, and providing the mitigation approach outline above is followed, the development is expected to have neutral impact on roosting bats.

Foraging and Commuting Bats

- 8.8.29 At least seven bat species have been recorded commuting alongside the woodlands on the Detailed Application Site (Eastern Parcel). Some hedgerows and scattered trees will be removed, however these large woodland blocks are being retained. Whilst the removal of some trees and hedgerows is required, no large gaps are proposed that are likely to prevent bats from using commuting routes.
- 8.8.30 The commuting routes around the Site (Eastern Parcel) will be maintained, with no works taking place within any root protection zones of retained trees, allowing a buffer around the woodland.
- 8.8.31 The bat-sensitive lighting strategy will ensure that commuting corridors are not exposed to light levels significantly beyond those already present at these habitats.
- 8.8.32 The scheme will result in the loss of modified grassland, some small areas of woodland, some limited hedgerow around the existing buildings and some scattered trees. This is likely to result in a loss of foraging habitats for bats within the Detailed Application Site (Eastern Parcel). However, as part of the mitigation measures a wildlife foraging area will be created towards the north of the Site (Eastern Parcel), including a basin and wildflower meadow to address drainage issues. This will provide a significant improvement in foraging opportunities in comparison to the existing modified grassland meadows. In addition to this, wildflower pollen and nectar mixes will be incorporated into the wider landscaping alongside hedgerow creation and some additional woodland planting. Where dead and diseased trees require removal they will be replaced with native species, to infill and maintain the extent of both hedgerow and woodland.
- 8.8.33 Monthly automated/static surveys will be conducted from April to October 2025 across the whole Site. The results of this work and details of any additional mitigation, where applicable to the Detailed Application Site, will be provided in supplementary submission.
- 8.8.34 With the implementation of a bat-sensitive lighting strategy the development is expected to have neutral impact on commuting or foraging bats.

Badger

- 8.8.35 Badgers have been confirmed to make use of the Detailed Application Site. Details on the impacts on badger are reported in a separate report (see Appendix 8.13).
- 8.8.36 Multiple active setts have been identified within the Detailed Application Site (Eastern Parcel), however most are within the deeper parts of the woodland on site and will be unaffected by the works, however there is evidence of older disused setts that are closer to the working areas. Pre-commencement checks will be required prior to works commencing to ensure that badgers have not reopened the disused setts or

constructed new setts elsewhere on site. If an active sett is found, then a licence may be required to either close the sett (if it lies within the construction zone), or to disturb the sett for the duration of the works.

- 8.8.37 The development is expected to have a neutral impact on badgers.

Hedgehog

- 8.8.38 Clearance of habitats suitable for hibernating hedgehogs such as hedgerows and scrub will be conducted outside of the winter period, where possible. If this is not possible, then clearance should be undertaken under supervision of an ECoW, adhering to a precautionary method of works. If hedgehogs are encountered, these can be moved by the ECoW to an area of retained habitat.
- 8.8.39 Any trenches or excavations should be backfilled on the same day as excavated, or covered with ply boarding, or should have an escape ladder (e.g. rough sawn timber plank) fitted, to allow any animals that may fall in to escape.
- 8.8.40 The development is expected to have a neutral impact on hedgehogs

Brown Hare

- 8.8.41 During construction, any trenches or excavations should be backfilled on the same day as excavated, or covered with ply boarding, or should have an escape ladder (e.g. sawn timber plank) fitted, to allow any animals that may fall in to escape.
- 8.8.42 The development is expected to have a neutral impact on brown hare.

Invasive Non-native Species

- 8.8.43 The Schedule 9 invasive plant variegated yellow archangel was recorded in one area of the Detailed Application Site, within a woodland belt.
- 8.8.44 This species will be removed from this location to improve the condition of the woodland. It is recommended that this is undertaken by a specialist contractor.
- 8.8.45 All waste materials including soils that contain variegated yellow archangel are considered controlled waste and should be disposed of appropriately. This means the contractor removing the waste from site needs to hold a waste carrier licence, and hold the right industry accreditations to handle and relocate controlled waste.
- 8.8.46 Once removed, monitoring for the plant should take place and any new plants found should be removed and disposed of appropriately to prevent it from re-establishing.
- 8.8.47 The development is expected to have a neutral impact on variegated yellow archangel.

Summary

8.8.48 Mitigation measures employed to reduce the level of effect of the development are detailed in Table 8.12 below.

Table 8.12. Ecological Mitigation Measures during Construction

Ecological Feature	Description of Potential Effect	Avoidance/ Mitigation Measures
Breckland SPA Chippenham Fen Ramsar Fenland SAC	The Habitats Regulations Assessment (HRA) provides detailed assessment of impacts from the development on designated sites. The construction phase is considered to result in no likely significant effects.	During construction no impacts are anticipated and therefore no avoidance or mitigation measures are required.
Non-statutory Sites	All sites are located over 1.7 km from the Detailed Application Site, within the village of Moulton. There is no linkage between these sites and the Detailed Application Site. As such there will be no direct impacts to these sites from the application.	During construction no impacts are anticipated and therefore no avoidance or mitigation measures are required.
Lowland Beech and Yew Woodland (Priority Habitat) Mature Trees	Loss of lowland beech and yew woodland habitat and mature trees.	Most of the lowland beech and yew woodland and mature trees on site are to be retained, and measures will be implemented to protect these habitats from impacts during construction. Where removal of trees is required, replanting will take place to offset their loss.
Veteran Trees	Pruning of veteran tree.	Veteran trees are largely being retained and will be protected during construction; however removal of the upper canopy of T330 will take place to prevent the tree from falling over. Ensuring the tree remains in place retaining the veteran feature. A tree management strategy will also be implemented ensuring the existing woodlands and veteran trees will be managed and maintained to continue providing ecology benefits and improve their condition.
Reptiles	Killing/injury of reptiles during construction	The entire site is well managed and maintained. As such the overall risk of impacting reptiles is minimal.

Ecological Feature	Description of Potential Effect	Avoidance/ Mitigation Measures
		Clearance of any suitable habitat for reptiles will follow a precautionary method of works, with toolbox talks provided to workers ahead of works covering what reptiles look like and what process should be initiated in the unlikely event one is found during clearance.
Birds	<p>Loss of nesting and foraging habitat</p> <p>Damage or destruction of active nests, eggs and/or chicks</p>	<p>Proposed habitat creation will deliver replacement nesting and foraging habitat.</p> <p>Vegetation clearance will be required to clear shrubs, scrub and trees. This should take place either outside the nesting bird season (March-August inclusive) or within 48 hours of a nesting bird check undertaken by a suitably qualified ecologist. If an active nest is found, an appropriate no-works buffer will be put in place around it until such a time as any chicks have fledged, or a suitably qualified ecologist has confirmed the nest is no longer active.</p>
Roosting Bats	<p>Disturbance of tree roosts through increased artificial lighting</p> <p>Loss of roosting opportunities as a result of tree pruning or felling</p> <p>Disturbance, damage or destruction of any tree roosts identified in 2025</p>	<p>Implementation of a bat-sensitive lighting strategy will avoid disturbance of roosts present in retained trees as a result of increased artificial lighting.</p> <p>The bat mitigation licence will adopt a 'roost resource' approach whereby any roosting opportunities lost as a result of tree pruning or felling will be compensated for.</p> <p>Appropriate mitigation for any tree roosts identified in 2025 that are to be disturbed, damaged or destroyed will be included in the updated version of this ES chapter. As these measures will form part of the bat mitigation licence application, once the licence is granted the Applicant will be legally bound to deliver them.</p>
Foraging and Commuting Bats	Loss of foraging and commuting habitat	The main woodland blocks and commuting features are being retained, and no large gaps are

Ecological Feature	Description of Potential Effect	Avoidance/ Mitigation Measures
	Disturbance of commuting and foraging bats due to increased lighting during construction	proposed that are likely to prevent bats from using commuting routes. Loss of grassland foraging habitat will be offset through new habitat created as part of the landscape strategy. A bat-sensitive lighting strategy will be implemented during construction to avoid illumination of bat commuting routes.
Badger	Disturbing or damaging setts	A pre-commencement badger survey will be carried out to check the status of all existing setts on site and to identify any new ones. If an active sett is found within a works area, a licence will be required before the works can proceed. This may cover disturbance to the sett for the duration of the works, or potentially the closing of the sett, depending on the nature of the sett and its location relative to the works area.
Hedgehog	Killing/injury of hedgehogs	The development will result in the clearance of some scrub, hedgerow and trees, which may provide suitable sheltering sites for hedgehog. As such these habitat will be checked for hedgehogs by staff prior to undertaking works. To avoid entrapment of hedgehogs during the construction phase, any excavations will be covered overnight or have an escape ramp (rough sawn timber plank) fitted, to ensure that if hedgehogs fall in they can get back out.
Brown Hare	Killing/injuring hares	It is unlikely that during construction the works will directly impact hares, given their ability to move off quickly. However to avoid entrapment, any excavations will be covered overnight or have an escape ramp (i.e. rough sawn timber plank) fitted, to ensure that if hares fall in they can get back out.

Ecological Feature	Description of Potential Effect	Avoidance/ Mitigation Measures
Invasive Non-native Species	Causing the spread of variegated yellow archangel on and off site	A specialist contractor will be appointed to remove this species from the woodland and dispose of it appropriately, as controlled waste.

Residual Effects

- 8.8.49 The residual effects following implementation of mitigation and avoidance measures for the enabling and construction phase of the Detailed Application (Eastern Parcel) are detailed in Table 8.13 below.

Table 8.13. Assessment of the Detailed Application (Eastern Parcel) Construction Phase Effects in Accordance with CIEEM Methodology

Ecological Feature	Geographic Importance of Ecological Feature	Avoidance/ Mitigation Measures to be Included to Address Potential Effect	Description of Residual Effect (including extent and magnitude)	Confidence of Residual Effect	Significance of Residual Effect Considering Avoidance / Mitigation
Breckland SPA Chippenham Fen Ramsar Fenland SAC	International	No impacts expected during construction phase, see HRA for full assessment.			
Non-statutory Sites	Local	No impacts expected during construction phase, sites over 1.7 km away from Detailed Application Site boundary.			
Lowland Beech and Yew Woodland (Priority Habitat) Mature Trees	Local	Erection of protective fencing to avoid potential construction impacts on the retained woodland and mature trees in accordance with the arboricultural method statement. Where removal of trees is required, replanting will take	Loss of small areas of lowland beech and yew woodland and several mature trees. The effect is direct, adverse, and localised. Magnitude is low due to the small proportion of habitat affected relative to local availability. Replacement planting will take time to	Certain	Minor adverse – not significant

Ecological Feature	Geographic Importance of Ecological Feature	Avoidance/ Mitigation Measures to be Included to Address Potential Effect	Description of Residual Effect (including extent and magnitude)	Confidence of Residual Effect	Significance of Residual Effect Considering Avoidance / Mitigation
		place to offset their loss.	establish, resulting in a long-term residual effect.		
Veteran Trees	Local	Erection of protective fencing to avoid potential construction impacts on the retained veteran trees in accordance with the arboricultural method statement. Replacement planting and HMMP	A Single veteran trees is due to be impacted by the scheme by cutting back the canopy. The effect is direct, adverse, and localised. Magnitude is low due to the small proportion of habitat affected relative to local availability. Replacement planting will take time to establish, however the HMMP will ensure that existing veteran trees are maintained overall the two approaches should result in a long-term residual effect.	Certain	Minor adverse – not significant
Reptiles	Not important at the local level	Clearance of any suitable habitat for reptiles will follow a precautionary method of works, with toolbox talks provided to workers ahead of works covering what reptiles look like and what process should be initiated in the unlikely event one is found during clearance.	Potential killing or injury of individual reptiles during vegetation clearance. Reptiles likely present in very low numbers. Effect is direct, adverse, temporary and highly localised. Magnitude is very low due to limited habitat and low population. Mitigation reduces risk but does not eliminate it.	Certain	Negligible – not significant
Birds	Local	Clearance of nesting habitat will occur outside of the bird breeding season where possible.	Small-scale loss of nesting and foraging habitat, with minimal risk to active nests due to mitigation (timing, checks). Magnitude is	Certain	Negligible – not significant

Ecological Feature	Geographic Importance of Ecological Feature	Avoidance/ Mitigation Measures to be Included to Address Potential Effect	Description of Residual Effect (including extent and magnitude)	Confidence of Residual Effect	Significance of Residual Effect Considering Avoidance / Mitigation
		Pre-clearance nesting bird checks will be undertaken where works occur during the breeding season. Bird boxes will be installed to mitigate for loss of nesting habitat. Habitat creation will provide increased nesting and foraging opportunities.	low, and effects are localised and temporary.		
Roosting Bats	<i>To be determined following 2025 surveys.</i>	Implementation of a bat-sensitive lighting strategy to avoid disturbance of roosts present in retained trees as a result of increased artificial lighting. Compensation for any roosting opportunities lost as a result of tree pruning or felling via installation/ creation of new roost features. Appropriate mitigation for any tree roosts that are to be disturbed, damaged or destroyed under a Natural England bat mitigation licence.	Potential destruction of bat roosts (likely common and widespread species), disturbance to bat roosts due to artificial lighting and loss of roosting opportunities from tree works. Mitigation measures reduce the effects to a minimal level. Magnitude is low to moderate, with effects being temporary and localised.	Currently uncertain due to requirement for further surveys to establish baseline, however mitigation approach is standard.	Likely to be minor adverse – not significant
Foraging and Commuting Bats	Local	The main woodland blocks and commuting features are being retained, and no large gaps are	Retention of key woodland blocks and commuting features, with no significant barriers to bat movement. Loss of	Currently uncertain due to requirement for further surveys to establish	Likely to be negligible – not significant

Ecological Feature	Geographic Importance of Ecological Feature	Avoidance/ Mitigation Measures to be Included to Address Potential Effect	Description of Residual Effect (including extent and magnitude)	Confidence of Residual Effect	Significance of Residual Effect Considering Avoidance / Mitigation
		proposed that are likely to prevent bats from using commuting routes. The development footprint has been reduced as much as possible to keep land take to a minimum. Loss of grassland foraging habitat will be offset through new habitat created as part of the landscape strategy. A bat-sensitive lighting strategy will be implemented during construction to avoid illumination of bat commuting routes.	grassland foraging habitat will be compensated by new habitat creation. Bat-sensitive lighting will prevent disturbance to commuting routes. Magnitude is low, and the effect is localised and temporary during construction.	baseline, however mitigation approach is standard.	
Badger	Local	Pre-commencement checks will be undertaken prior to works commencing to ensure badger usage of the site has not changed, since the initial assessment.	Disused setts currently present; pre-commencement survey will confirm status. If any active setts are found, works will proceed under licence with appropriate mitigation. Any residual effect is temporary, localised, and of low magnitude.	Certain	Negligible – not significant
Hedgehog	Not important at the local level	Habitat suitable for hedgehogs will be checked for hedgehogs by staff prior to undertaking works. To avoid entrapment of hedgehogs during the construction phase, any	Risk of hedgehog injury or entrapment during construction is minimised through pre-works checks and measures to prevent entrapment in excavations. Residual effect is temporary, localised, and of low magnitude.	Certain	Negligible – not significant

Ecological Feature	Geographic Importance of Ecological Feature	Avoidance/ Mitigation Measures to be Included to Address Potential Effect	Description of Residual Effect (including extent and magnitude)	Confidence of Residual Effect	Significance of Residual Effect Considering Avoidance / Mitigation
		excavations will be covered overnight or have an escape ramp (rough sawn timber plank) fitted, to ensure that if hedgehogs fall in they can get back out.			
Brown Hare	Not important at the local level	During construction, any excavations will be covered overnight or have an escape ramp fitted, to ensure that if hares fall in they can get back out.	Risk of injury or entrapment of brown hare during construction is reduced through provision of escape ramps in excavations. Residual effect is temporary, localised, and of low magnitude.	Certain	Negligible – not significant
Invasive species	Not important at the local level	A specialist contractor will be appointed to remove variegated yellow archangel from the woodland and dispose of it appropriately, as controlled waste.	The risk of spreading the Schedule 9 invasive species is minimised through specialist removal and disposal as controlled waste. However, there is a potential for regrowth if treatment is unsuccessful, which could require ongoing management. Residual effect is low to moderate, with uncertainty around the long-term success of the mitigation.	Certain	Minor adverse - negligible

Mitigation Measures - Hybrid Application (Eastern and Western Parcel)

Breckland SPA, Chippenham Fen Ramsar, Fenland SAC

- 8.8.50 Impacts on internationally important sites have been addressed within the Habitats Regulations Assessment (HRA) (which is submitted as a standalone report in support of the planning application). All construction phase impacts identified have been screened out.
- 8.8.51 The development is expected to have a neutral impact on the internationally important sites.

Non-statutory Sites

- 8.8.52 These include Halfmoon Plantation Pit CWS, Barberry Hedge, Moulton CWS, Moulton Churchyard, Footpath and Wood CWS, and Moulton Roadside Verge CWS. They are located approximately 1.7 km south of the site, around the village of Moulton. These sites are designated for their local wildlife value, with some rarer species present. The application will not result in any direct impacts on these sites. While the woodland in Moulton Churchyard may share some similar species with these areas, there is no functional linkage between them. It is further considered highly unlikely that these sites would depend on the habitat within the Hybrid Application Site.
- 8.8.53 The development is expected to have a neutral impact on the non-statutory sites.

Lowland beech and yew woodland and Mature Trees

- 8.8.54 Most of the mature trees onsite and within the woodland are to be retained and measures will be implemented to protect and retain these trees. Where removal is required, replanting will take place to offset the loss of individual trees.
- 8.8.55 In accordance with British Standard 5837 Trees in Relation to Design, Demolition and Construction [24] care should be taken to avoid impacts on any mature trees. Where the trees are not directly impacted by the works, care will need to be taken to avoid adverse impacts to the root systems of these trees during the works and to avoid damaging branches with machinery. During site clearance and construction, the trees to be retained will be protected from damage with Heras fencing erected around the root protection zone of these trees. In addition, the findings and recommendations outlined within the Hayden's Arboricultural Consultants Ltd Tree Survey and Arboricultural Impact Assessment (which is submitted in support of both planning applications as a standalone document) should be adhered to during the development works.
- 8.8.56 The development is expected to have a slight negative impact on the lowland beech and yew woodland and mature trees.

Veteran Trees

- 8.8.57 As above veteran trees are being retained and will be protected as detailed at 8.8.11. above, however a single veteran tree will potentially be impacted by the scheme (marked as T330). The tree is located within the woodland adjacent to existing paddocks and is currently leaning towards the paddocks, it has a large wound feature from base up the main trunk. The AIA confirms that there is structural root failure and a fungal infection present. In order to retain the tree, removal of the upper canopy is required to stabilise the tree and prevent it from falling over. This will result in the loss of some parts of the tree due to pruning; however, the tree and its veteran features will be retained.
- 8.8.58 An arboricultural management plan will be produced covering the maintaining and protecting the woodlands during both the construction and operational phases. This comprehensive plan will outline strategies to safeguard and enhance the retained veteran trees, ensuring they continue to thrive and provide ecological benefits.

- 8.8.59 The development is expected to have a minor negative impact on veteran trees where the crown must be removed.

Fungi

- 8.8.60 One of the key features of wood-pasture and parkland is the presence of fungi, which are essential elements of these habitats. Consequently, fungi surveys have been conducted in the Western Parcel of the Hybrid Application Site. The results of these surveys will be included in a supplementary submission, alongside details of any mitigation required.

Reptiles

- 8.8.61 The Hybrid Application Site is under regular management. As such the grassland, hedgerows and woodland margins provide limited suitable habitat for reptiles. The development will result in the loss of the grassland and hedgerows habitats, and some of the works are required along the woodland margins. While the habitats are largely unsuitable, it is considered that low numbers of individual reptiles may be present on Site, and therefore there is risk that construction works could result in the killing or injury of reptiles.
- 8.8.62 As such a precautionary method of works for clearing habitat suitable for reptiles will be produced. This will include phased vegetation clearance and careful dismantling of any potential refuges under the supervision of an ECoW, hand searches by the ECoW during vegetation clearance and supervised topsoil stripping. Tool-box talks will be given by the on-site ECoW to contractors ahead of works. Any reptiles found will be moved into areas of suitable retained habitat away from the works areas.
- 8.8.63 Site clearance (excavation of areas of suitable habitat) will be undertaken when reptiles are active during March to October inclusive, during suitable weather with all excavations to be covered at night or a ramp left in so animals can climb out.
- 8.8.64 The development is expected to have a neutral impact on reptiles

Breeding Birds

- 8.8.65 Vegetation clearance works to take place outside of the bird nesting season (March-August inclusive), where possible. If any clearance is to be undertaken during the nesting season, the areas to be cleared would be checked by an ECoW immediately prior to clearance. Any active nests will be protected by a suitable no-works buffer until any chicks have fledged or a suitably qualified ecologist has confirmed the nest is no longer active.
- 8.8.66 Habitat creation will include other neutral grassland, scrub, woodland, trees and a hedgerow which will include native fruited and berry producing species as well as mixed flowering species to ensure that there is improved foraging capacity on site for birds during winter and in the summer.
- 8.8.67 To help mitigate for the loss of nesting opportunities resulting from clearance of vegetation, seven general purpose bird boxes will be installed on trees and eight swift boxes will be installed on buildings. Boxes will be constructed from long-lasting materials (e.g. woodcrete, or recycled plastic) to maximise their lifespan.

8.8.68 The development is expected to have a neutral impact on breeding birds

Roosting Bats

- 8.8.69 No bats were recorded utilising the buildings and therefore these can be demolished. Under CIEEM guidance, the bat survey results are considered valid for around 18-24 months, after which an update assessment may be necessary. If demolition works have not commenced during this period, then the emergence surveys of the buildings will need to be updated.
- 8.8.70 B1 will be retained with some internal renovation works. These renovations are restricted to existing rooms and will not affect the loft spaces or voids that could be utilized by bats. Consequently, it is unlikely that the renovations will affect any bats that may roost in these areas. Therefore, emergence surveys were not conducted for this building.
- 8.8.71 A bat-sensitive lighting strategy in line with Guidance Note 08/23 produced by the BCT and the ILP, will be implemented to avoid disturbance impacts to key habitats (i.e. the woodland belts) and any PRF trees associated with those habitats. The lighting strategy will ensure that key bat habitats do not experience lux levels above 0.2 lux on the horizontal plane and 0.4 lux on the vertical plane, where there is currently no lighting; and do not experience any increase in lighting of more than 0.2 lux on the horizontal plane and 0.4 lux on the vertical plane where there is existing lighting on Site.
- 8.8.72 Following completion of the 2025 tree scoping exercise (see methodology within Appendix 8.2. above) to confirm the total number of PRF-I and PRF-M trees to be affected by pruning or felling, all PRF-I and PRF-M trees will be subject to aerial or ladder-based inspection, as appropriate, in May-July. For PRF-I trees with bat roosting evidence (where the type of roost is not immediately obvious), and PRF-M trees, roost characterisation surveys will be undertaken to determine the species and number of bats present. This information will be used to inform a mitigation licence application to Natural England.
- 8.8.73 In addition to mitigating for any known roosts identified during the roost characterisation surveys, a so-called 'roost resource' approach will be adopted for the bat mitigation licence, whereby a likely worst case scenario of potential bat roosts will be agreed with Natural England to facilitate the lawful removal of all PRF trees that are to be affected by pruning or felling, under a precautionary method of works. Appropriate mitigation will be put in place to ensure no net loss of the available roost resource. This will avoid delays resulting from the unexpected finding of bats in PRF trees during the pruning/felling works.
- 8.8.74 The landscaping will be designed to provide increased foraging opportunities, especially around the proposed basin to the north, where pollen and nectar mixes will ensure increased invertebrate numbers for bats to feed on, this should offset the minimal loss of modified grassland and hedgerow found around the existing buildings.
- 8.8.75 Based on the survey data available at the time of writing, the large number of PRF trees that are to be retained and not impacted, and providing the mitigation approach outline above is followed, the development is expected to have a neutral impact on roosting bats.

Foraging and commuting bats

- 8.8.76 At least seven bat species have been recorded commuting alongside the woodlands on the Detailed Application Site (Eastern Parcel). Some hedgerows and scattered trees will be removed, however these large woodland blocks are being retained. Whilst the removal of some trees and hedgerows is required, no large gaps are proposed that are likely to prevent bats from using commuting routes.
- 8.8.77 The commuting routes around the application Site will be maintained, with no works taking place within any root protection zones of retained trees, allowing a buffer around the woodland.
- 8.8.78 The bat-sensitive lighting strategy will ensure that commuting corridors are not exposed to light levels significantly beyond those already present at these habitats.
- 8.8.79 The development will result in the loss of modified grassland, some small areas of woodland, some limited hedgerow around the existing buildings and some scattered trees. This is likely to result in a loss of foraging habitats for bats within the Detailed Application Site (Eastern Parcel). However, as part of the mitigation measures a wildlife foraging area will be created towards the north of the site, including a basin and wildflower meadow to address drainage issues. This will provide a significant improvement in foraging opportunities in comparison to the existing modified grassland meadows. In addition to this, wildflower pollen and nectar mixes will be incorporated into the wider landscaping alongside hedgerow creation and some additional woodland planting. Where dead and diseased trees require removal they will be replaced with native species, to infill and maintain the extent of both hedgerow and woodland.
- 8.8.80 Monthly automated/static surveys will be conducted from April to October 2025 across the Hybrid Application Site. The results of this work and details of any additional mitigation will be provided in an supplementary submission to confirm the findings of the ES.
- 8.8.81 With the implementation of a bat-sensitive lighting strategy the development is expected to have a neutral impact on commuting or foraging bats.

Badger

- 8.8.82 Badgers have been confirmed to make use of the Hybrid Application Site. Details on the impacts on badger are reported in a separate report (Appendix 8.13).
- 8.8.83 No active setts are found within the Detailed Application Site boundary (Eastern Parcel), however there is evidence of older disused setts. Pre-commencement checks will be required prior to works commencing to ensure that badgers have not reopened the disused setts or constructed setts elsewhere on site. If an active sett is found, then a licence may be required to either close the sett (if it lies within the construction zone), or to disturb the sett for the duration of the works.
- 8.8.84 The development is expected to have a neutral impact on badgers.

Hedgehog

- 8.8.85 Clearance of habitats suitable for hibernating hedgehogs such as hedgerows and scrub will be conducted outside of the winter period, where possible. If this is not possible, then clearance should be undertaken under supervision of an ECoW, adhering to a precautionary method of works. If hedgehogs are encountered, these can be moved by the ECoW to an area of retained habitat.
- 8.8.86 Any trenches or excavations should be backfilled on the same day as excavated, or covered with ply boarding, or should have an escape ladder (e.g. rough sawn timber plank) fitted, to allow animals that may fall in to escape.
- 8.8.87 The development is expected to have a neutral impact on hedgehog.

Brown Hare

- 8.8.88 The Hybrid Application will result in the loss of open grassland habitat that this species prefers.
- 8.8.89 During construction, any trenches or excavations should be backfilled on the same day as excavated, or covered with ply boarding, or should have an escape ladder (e.g. sawn timber plank) fitted, to allow any animals that may fall in to escape.
- 8.8.90 The development is likely to have a slight negative impact on brown hare.

Invasive Non-native Species

- 8.8.91 The Schedule 9 invasive plant variegated yellow archangel was recorded in one area of the Detailed Application Site (Eastern Parcel), within a woodland belt.
- 8.8.92 This species will be removed from this location to improve the condition of the woodland. It is recommended that this is undertaken by a specialist contractor.
- 8.8.93 All waste materials including soils that contain variegated yellow archangel are considered controlled waste and should be disposed of appropriately. This means the contractor removing the waste from site needs to hold a waste carrier licence, and hold the right industry accreditations to handle and relocate controlled waste.
- 8.8.94 Once removed, monitoring for the plant should take place and any new plants found should be removed and disposed of appropriately to prevent it from re-establishing.
- 8.8.95 The development is expected to have a neutral impact on invasive non-native species

Summary

- 8.8.96 Mitigation measures employed to reduce the level of effect of the development are detailed in Table 8.14 below.

Table 8.14. Ecological Mitigation Measures during Construction

Ecological Feature	Description of Potential Effect	Avoidance/ Mitigation Measures
Breckland SPA Chippenham Fen Ramsar Fenland SAC	The HRA provides detailed assessment of impacts from scheme to designated sites. During construction the construction is considered to result in no likely significant effects.	During construction no impacts are anticipated and therefore no avoidance or mitigation measures are required.
Non-statutory sites	All the sites are located over 1.7 km from the Hybrid Application Site, within the village of Moulton. There is no linkage between these sites and the Hybrid Application Site. As such there will be no direct impacts to these sites from the application.	During construction no impacts are anticipated and therefore no avoidance or mitigation measures are required.
Lowland Beech and Yew Woodland (Priority Habitat) Mature Trees	Loss of lowland beech and yew woodland habitat and mature trees.	Most of the lowland beech and yew woodland and mature trees on site are to be retained, and measures will be implemented to protect these habitats from impacts during construction. Where removal of trees is required, replanting will take place to offset their loss.
Veteran Trees	Pruning of veteran trees.	Veteran trees are largely being retained and will be protected during construction; however removal of the upper canopy of T330 will take place to prevent the tree from falling over. Ensuring the tree remains in place retaining the veteran feature. A tree management strategy will also be implemented ensuring the existing woodlands and veteran trees will be managed and maintained to continue providing ecology benefits and improve their condition.
Fungi	Results of eDNA survey still required to confirm impacts	
Reptiles	Killing/injury of reptiles during construction	The entire site is well managed and maintained as such the overall risk of impacting reptile's is minimal. Clearance of any suitable habitat for reptiles will follow a precautionary method of works, with toolbox talks provided to workers ahead of works covering what reptiles look like and what process should be initiated in the unlikely event one is found during clearance.

Ecological Feature	Description of Potential Effect	Avoidance/ Mitigation Measures
Birds	<p>Loss of nesting and foraging habitat</p> <p>Damage or destruction of active nests, eggs and/or chicks</p>	<p>Proposed habitat creation will deliver replacement nesting and foraging habitat.</p> <p>Vegetation clearance will be required to clear shrubs, scrub and trees. This should take place either outside the nesting bird season (March-August inclusive) or within 48 hours of a nesting bird check undertaken by a suitably qualified ecologist. If an active nest is found, an appropriate no-works buffer will be put in place around it until such a time as any chicks have fledged, or a suitably qualified ecologist has confirmed the nest is no longer active.</p>
Roosting Bats	<p>Disturbance of tree roosts through increased artificial lighting</p> <p>Loss of roosting opportunities as a result of tree pruning or felling</p> <p>Disturbance, damage or destruction of any tree roosts identified in 2025</p>	<p>Implementation of a bat-sensitive lighting strategy will avoid disturbance of roosts present in retained trees as a result of increased artificial lighting.</p> <p>The bat mitigation licence will adopt a 'roost resource' approach whereby any roosting opportunities lost as a result of tree pruning or felling will be compensated for.</p> <p>Appropriate mitigation for any tree roosts identified in 2025 that are to be disturbed, damaged or destroyed will be included in the updated version of this ES chapter. As these measures will form part of the bat mitigation licence application, once the licence is granted the Applicant will be legally bound to deliver them.</p>
Foraging and Commuting Bats	<p>Loss of foraging and commuting habitat</p> <p>Disturbance of commuting and foraging bats due to increased lighting during construction</p>	<p>The main woodland blocks and commuting features are being retained, and no large gaps are proposed that are likely to prevent bats from using commuting routes.</p> <p>Loss of grassland foraging habitat will be offset through new habitat created as part of the landscape strategy.</p> <p>A bat-sensitive lighting strategy will be implemented during construction to avoid illumination of bat commuting routes.</p>
Badger	Disturbing or damaging setts	A pre-commencement badger survey will be carried out to check the status of all existing setts on site and to identify

Ecological Feature	Description of Potential Effect	Avoidance/ Mitigation Measures
		any new ones. If an active sett is found within a works area, a licence will be required before the works can proceed. This may cover disturbance to the sett for the duration of the works, or potentially the closing of the sett, depending on the nature of the sett and its location relative to the works area.
Hedgehog	Killing/injury of hedgehogs	The development will result in the clearance of some scrub, hedgerow and trees, which may provide suitable sheltering sites for hedgehog. As such these habitats will be checked for hedgehogs by staff prior to undertaking works. To avoid entrapment of hedgehogs during the construction phase, any excavations will be covered overnight or have an escape ramp (rough sawn timber plank) fitted, to ensure that if hedgehogs fall in they can get back out.
Brown Hare	Killing/injuring hares Loss of suitable habitat	It is unlikely that during construction the works will directly impact hares, given their ability to move off quickly. However, to avoid entrapment, any excavations will be covered overnight or have an escape ramp (i.e. rough sawn timber plank) fitted, to ensure that if hares fall in they can get back out. The loss of the main open modified grassland paddocks will result in the permanent loss of habitat for this species. Whilst landscaping will create some suitable habitats it is unlikely to fully compensate for the habitat lost.
Invasive species	Causing the spread of variegated yellow archangel on and off site	A specialist contractor will be appointed to remove this species from the woodland and dispose of it appropriately, as controlled waste.

Residual Effects

8.8.97 The residual effects following implementation of mitigation and avoidance measures for the site enabling and construction phase of the Hybrid Application are detailed in Table 8.15 below.

Table 8.15. Assessment of the Hybrid Application Construction Phase Effects in Accordance with CIEEM Methodology

Ecological Feature	Geographic Importance of Ecological Feature	Avoidance/ Mitigation Measures to be Included to Address Potential Effect	Description of Residual Effect (including extent and magnitude)	Confidence of Residual Effect	Significance of Residual Effect Considering Avoidance / Mitigation
Breckland SPA Chippenham Fen Ramsar Fenland SAC	International	No impacts expected during construction phase, see HRA for full assessment.			
Non-statutory sites	Local	No impacts expected during construction phase, sites over 1.7 km away from Hybrid Application boundary.			
Lowland Beech and Yew Woodland (Priority Habitat) Mature Trees	Local	Erection of protective fencing to avoid potential construction impacts on the retained woodland and mature trees in accordance with the arboricultural method statement. Where removal of trees is required, replanting will take place to offset their loss.	Loss of small areas of lowland beech and yew woodland and several mature trees. The effect is direct, adverse, and localised. Magnitude is low due to the small proportion of habitat affected relative to local availability. Replacement planting will take time to establish, resulting in a long-term residual effect.	Certain	Minor adverse – not significant
Veteran Trees	Local	Erection of protective fencing to avoid potential construction impacts on the retained veteran trees in accordance with the arboricultural method statement.	Single veteran trees is due to be lost by the scheme. The effect is direct, adverse, and localised. Magnitude is low due to the small proportion of habitat affected relative to local availability. Replacement planting	Certain	Minor adverse – not significant

Ecological Feature	Geographic Importance of Ecological Feature	Avoidance/ Mitigation Measures to be Included to Address Potential Effect	Description of Residual Effect (including extent and magnitude)	Confidence of Residual Effect	Significance of Residual Effect Considering Avoidance / Mitigation
		Replacement planting and HMMP	will take time to establish, however the woodland management strategy will ensure that existing veteran trees are maintained overall the two approaches should result in a long-term residual effect.		
Fungi	Impacts unknown, pending receipt of results from eDNA testing.				
Reptiles	Not important at the local level	Clearance of any suitable habitat for reptiles will follow a precautionary method of works, with toolbox talks provided to workers ahead of works covering what reptiles look like and what process should be initiated in the unlikely event one is found during clearance.	Potential killing or injury of individual reptiles during vegetation clearance. Reptiles likely present in very low numbers. Effect is direct, adverse, temporary and highly localised. Magnitude is very low due to limited habitat and low population. Mitigation reduces risk but does not eliminate it.	Certain	Negligible – not significant
Birds	Local	Clearance of nesting habitat will occur outside of the bird breeding season where possible. Pre-clearance nesting bird checks will be undertaken where works occur during the breeding season. Bird boxes will be installed to mitigate for loss of nesting habitat. Habitat creation will provide increased nesting and foraging opportunities.	Small-scale loss of nesting and foraging habitat, with minimal risk to active nests due to mitigation (timing, checks). Magnitude is low, and effects are localised and temporary.	Certain	Negligible – not significant

Ecological Feature	Geographic Importance of Ecological Feature	Avoidance/ Mitigation Measures to be Included to Address Potential Effect	Description of Residual Effect (including extent and magnitude)	Confidence of Residual Effect	Significance of Residual Effect Considering Avoidance / Mitigation
Roosting Bats	<i>To be determined following 2025 surveys.</i>	Implementation of a bat-sensitive lighting strategy to avoid disturbance of roosts present in retained trees as a result of increased artificial lighting. Compensation for any roosting opportunities lost as a result of tree pruning or felling via installation/ creation of new roost features. Appropriate mitigation for any tree roosts that are to be disturbed, damaged or destroyed under a Natural England bat mitigation licence.	Potential destruction of bat roosts (likely common and widespread species), disturbance to bat roosts due to artificial lighting and loss of roosting opportunities from tree works. Mitigation measures reduce the effects to a minimal level. Magnitude is low to moderate, with effects being temporary and localised.	Currently uncertain due to requirement for further surveys to establish baseline, however mitigation approach is standard.	Likely to be minor adverse – not significant
Foraging and Commuting Bats	Local	The main woodland blocks and commuting features are being retained, and no large gaps are proposed that are likely to prevent bats from using commuting routes. The development footprint has been reduced as much as possible to keep land take to a minimum. Loss of grassland foraging habitat will be offset through new habitat created as part of the landscape strategy. A bat-sensitive lighting strategy will be implemented during construction	Retention of key woodland blocks and commuting features, with no significant barriers to bat movement. Loss of grassland foraging habitat will be compensated by new habitat creation. Bat-sensitive lighting will prevent disturbance to commuting routes. Magnitude is low, and the effect is localised and temporary during construction.	Currently uncertain due to requirement for further surveys to establish baseline, however mitigation approach is standard.	Likely to be negligible – not significant

Ecological Feature	Geographic Importance of Ecological Feature	Avoidance/ Mitigation Measures to be Included to Address Potential Effect	Description of Residual Effect (including extent and magnitude)	Confidence of Residual Effect	Significance of Residual Effect Considering Avoidance / Mitigation
		to avoid illumination of bat commuting routes.			
Badger	Local	Pre-commencement checks will be undertaken prior to works commencing to ensure badger usage of the site has not changed, since the initial assessment.	Disused setts currently present; pre-commencement survey will confirm status. If any active setts are found, works will proceed under licence with appropriate mitigation. Any residual effect is temporary, localised, and of low magnitude.	Certain	Negligible – not significant
Hedgehog	Not important at the local level	Habitat suitable for hedgehogs will be checked for hedgehogs by staff prior to undertaking works. To avoid entrapment of hedgehogs during the construction phase, any excavations will be covered overnight or have an escape ramp (rough sawn timber plank) fitted, to ensure that if hedgehogs fall in they can get back out.	Risk of hedgehog injury or entrapment during construction is minimised through pre-works checks and measures to prevent entrapment in excavations. Residual effect is temporary, localised, and of low magnitude.	Certain	Negligible – not significant
Brown Hare	Not important at the local level	The application will result in the loss of the open paddocks the hares use, whilst habitat will be created as part of the scheme it is unlikely to compensate for the loss.	Loss of open paddocks used by brown hare will not be fully compensated by proposed habitat creation. Risk of injury or entrapment during construction will be reduced through covering excavations or fitting escape	Certain	Minor adverse – not significant

Ecological Feature	Geographic Importance of Ecological Feature	Avoidance/ Mitigation Measures to be Included to Address Potential Effect	Description of Residual Effect (including extent and magnitude)	Confidence of Residual Effect	Significance of Residual Effect Considering Avoidance / Mitigation
		During construction, any excavations will be covered overnight or have an escape ramp fitted, to ensure that if hares fall in they can get back out.	ramps. Residual effect is permanent in terms of habitat loss, of low to moderate magnitude, and localised.		
Invasive species	Not important at the local level	A specialist contractor will be appointed to remove variegated yellow archangel from the woodland and dispose of it appropriately, as controlled waste.	The risk of spreading the Schedule 9 invasive species is minimised through specialist removal and disposal as controlled waste. However, there is a potential for regrowth if treatment is unsuccessful, which could require ongoing management. Residual effect is low to moderate, with uncertainty around the long-term success of the mitigation.	Certain	Minor adverse - negligible

Operation

8.8.98 While the majority of impacts from the scheme occur during the construction phase, primarily due to the clearance of habitats to make way for building works, there are several impacts that may arise once the project is complete and occupied. These impacts can encompass a range of factors, such as increased demand on local infrastructure, environmental considerations, and other effects stemming from the residential presence on site. Upon reviewing these, the following have been identified:

- Recreational impacts: Increased residential occupancy may lead to more frequent activities within the local area, including dog walking. The regularity and frequency of such activities can have a significant impact on the local environment;
- Lighting: Artificial lighting can affect wildlife, creating barriers for commuting bats or even disturbing their roosts; and
- Habitat management: Continued management of habitats is required as part of on-site mitigation efforts to ensure they meet their condition and criteria.

Mitigation Measures - Detailed Application (Eastern Application)

Breckland SPA, Chippenham Fen Ramsar, Fenland SAC and Breckland Farmland SSSI

- 8.8.99 Internationally and nationally important sites have been addressed within the HRA (which is submitted in support of the planning application as a standalone report). All impacts other than recreational impacts were screened out at stage 1. The operational phase has the potential to result in increased recreational activity at the above designated sites. This will be addressed through the creation of dynamic on-site greenspaces including circular walking routes and designated on- and off-lead dog areas, supported by leaflet drops to residents encouraging local and on-site recreation.
- 8.8.100 The development is expected to have a neutral impact on nationally and internationally important sites.

Non-statutory Sites

- 8.8.101 The non-statutory sites are all located approximately 1.7 km south of the Detailed Application Site, around the village of Moulton. Potential impacts to these sites from the operational phase are highly unlikely given the distance from the site and the nature of some of these reserves (road verges or hedges). Only sites such as the Halfmoon Plantation Pit CWS and Moulton Churchyard, Footpath and Wood CWS could potentially be impacted, but even then, impacts would be limited to possibly increased recreational pressure. However, on-site measures are in place to encourage recreation to remain local to the Detailed Application Site (Eastern Parcel), thereby mitigating potential impacts on these non-statutory sites.
- 8.8.102 As such, the development when operational is considered to have a neutral impact on nearby non-statutory sites.

Lowland Beech and Yew Woodland (Priority Habitat) and Mature Trees

- 8.8.103 In operation, management of the woodland will be taken over by a management contractor, with a Habitat Management and Monitoring Plan (HMMP) securing the long term management of the habitat. This can be secured via a planning condition.
- 8.8.104 As such the development when operational is considered to have a neutral impact on the lowland beech and yew woodland and mature trees during the operational phases.

Veteran Trees

- 8.8.105 As above, an HMMP will secure the long term management of the veteran trees and ensure they continue to be maintained. As such the development when operational is considered to have a neutral impact on veteran trees during the operational phases.

Reptiles

- 8.8.106 The application will create multiple landscaped areas for wildlife across the site, including a large open space area of neutral grassland alongside a drainage basin. These features will have sloping banks and

occasional water, making them ideal for reptiles to bask and forage. They will be continually managed through the HMMP ensuring habitat continues to provide suitable spaces for reptiles

- 8.8.107 There are no operational impacts expected from the development on reptiles; therefore, the development, when operational, is considered to have a neutral impact on reptiles.

Breeding Birds

- 8.8.108 The development will create new nesting and foraging areas whilst also encouraging increased nesting on site with the improvements of habitats present, the HMMP will cover the long term management of the boxes likely the clearing and removal of old nests to ensure they can continue to be used for the lifetime of the management.
- 8.8.109 As there are no operational impacts expected from the scheme on breeding birds; therefore, the development, when operational, is considered to have a neutral impact on breeding birds.

Roosting Bats

- 8.8.110 The HMMP will cover the installation of bat boxes on site as well as their continued management and maintenance if needed.
- 8.8.111 The bat-sensitive lighting strategy will effectively avoid the disturbance of any bat roosts as a result of lighting during the operational phase of the development.
- 8.8.112 Overall, during the operational phase the development is considered likely to have a neutral impact on roosting bats.

Foraging and Commuting Bats

- 8.8.113 The HMMP will cover the continued management of the woodland and landscaping features on site. This will ensure that it continues to provide connectivity and foraging for bats in the long term.
- 8.8.114 The bat-sensitive lighting strategy will ensure that any significant increase in lux levels is avoided along key commuting routes and in any key foraging locations within the Detailed Application Site (Eastern Parcel).
- 8.8.115 The landscaping will be designed to provide increased foraging opportunities, especially around the proposed basin to the north, where pollen and nectar mixes will ensure increased invertebrate numbers for bats to feed on, this should offset the minimal loss of modified grassland and hedgerow found around the existing buildings.
- 8.8.116 Overall during the operational phase the development is considered likely to have a neutral impact on foraging and commuting bats.

Badger

- 8.8.117 Badgers have been recorded on site. During the operational phase badgers are unlikely to be affected by the residential development. They are likely to benefit from the foraging opportunities created by the proposed landscaping, and through the increased availability of drinking water in the SuDS basin.
- 8.8.118 During the operational phase the development is considered likely to have a neutral impact upon badgers.

Hedgehog

- 8.8.119 During operation, hedgehogs will benefit from increased foraging and refuge opportunities due to the enhanced planting around the site. However, they may face difficulties accessing garden spaces. To ensure that hedgehogs can access residential gardens, hedgehog-friendly concrete fence plates or their equivalent will be used, allowing hedgehogs to continue accessing these areas.
- 8.8.120 Overall during the operational phase the development is considered likely to have a neutral impact on hedgehogs.

Brown Hare

- 8.8.121 The operational phase is unlikely to affect brown hare, as hares were not seen within the Detailed Application Site (Eastern Parcel) boundary during any of the surveys
- 8.8.122 Overall during the operational phase the development is considered likely to have a neutral impact upon brown hare.

Invasive Non-native Species

- 8.8.123 The variegated yellow archangel will be removed during the construction phase. During the operational phase, implementation of the HMMP will ensure that any re-emergence of these species within the landscaping is appropriately managed and removed.
- 8.8.124 Overall during the operational phase the development is considered likely to have a neutral impact upon invasive non-native species.

Summary

- 8.8.125 Mitigation measures employed to reduce the level of effect of the development are detailed in Table 8.16 below.

Table 8.16. Ecological Mitigation Measures During Operation

Ecological Feature	Description of Potential Effect	Avoidance/ Mitigation Measures
Breckland SPA Chippenham Fen Ramsar Fenland SAC Breckland Farmland SSSI	Recreational impacts	This has been addressed within the HRA. In summary, the application will provide on-site recreational spaces, dog off-lead areas, waste bins, and leaflets covering local walking routes. These measures are designed to encourage the use of both the site and the local area, reducing the need for residents to travel further afield to the designated sites.
Non-statutory sites	There are no likely impacts to non-statutory sites, outside of minor recreational pressure.	This is addressed by the measures outline above for the designated sites.
Lowland Beech and Yew Woodland (Priority Habitat) Mature Trees	Improper management	This will be addressed through the HMMP which will cover measures needed to achieve and maintain target condition for these habitats.
Veteran Trees	Improper management	This will be addressed through the HMMP which will cover measures needed to achieve and maintain target condition for veteran trees.
Reptiles	There is not likely effect from the operational phase of the development on reptiles	No mitigation required.
Birds	Improper management of nesting habitat and bird boxes	This will be addressed through the HMMP, which will cover the measures needed for the habitats on-site to achieve their target conditions. The document will also include details on how and where to install the required bird boxes, as well as the ongoing management of these boxes.
Roosting Bats	Potential lighting impacts on roost locations	A bat-sensitive lighting strategy will be designed to include measures to avoid illumination of bat roosts beyond existing lux levels.
Foraging and Commuting Bats	Potential lighting impacts on foraging and commuting routes	A bat-sensitive lighting strategy will be designed to ensure that bats can continue to use the site effectively without being disturbed by artificial lighting above existing levels.
Badger	No impacts during the operational phase	No mitigation required.

Ecological Feature	Description of Potential Effect	Avoidance/ Mitigation Measures
Hedgehog	Lack of access to gardens for foraging	To ensure hedgehogs can access garden spaces, residential fences will be designed or fitted with hedgehog gaps or spaces. This will allow hedgehogs to move freely between gardens within the Detailed Application Site.
Brown Hare	No impacts at the operational phase	No mitigation required.
Invasive species	No impacts at the operational phase	The HMMP will ensure that regular site management checks are conducted to prevent the return of invasive species.

Residual Effects

- 8.8.126 With the implementation of the above mitigation there should be no residual effects during the operational phase of the development.

Mitigation Measures - Hybrid Application (Eastern and Western Parcels)

Breckland SPA, Chippenham Fen Ramsar, Fenland SAC and Breckland Farmland SSSI

- 8.8.127 Internationally important sites have been addressed within the HRA (which is submitted in support of the planning application as a standalone document), all impacts other than recreational impacts were screened out at stage 1. The operational phase has the potential to result in increased recreational activity at the above designated sites. This will be addressed through the creation of dynamic on-site greenspaces including circular walking routes and designated on- and off-lead dog areas, supported by leaflet drops to residents encouraging local and on-site recreation.
- 8.8.128 The development is expected to have a neutral impact on nationally and internationally important sites.

Non-statutory Sites

- 8.8.129 The non-statutory sites are all located approximately 1.7 km south of the Hybrid Application Site, around the village of Moulton. Potential impacts to these sites from the operational phase are highly unlikely given the distance from the site and the nature of some of these reserves (road verges or hedges). Only sites such as the Halfmoon Plantation Pit CWS and Moulton Churchyard, Footpath and Wood CWS could potentially be impacted, but even then, impacts would be limited to possibly increased recreational pressure. However, on-site measures are in place to encourage recreation to remain local to the Hybrid Application Site, thereby mitigating potential impacts on these non-statutory sites.
- 8.8.130 As such, the development when operational is considered to have a neutral impact on the non-statutory sites near the proposal.

Lowland Beech and Yew Woodland (Priority Habitat) and Mature Trees

- 8.8.131 In operation management of the woodland will be taken over by a management contractor, with an HMMP securing the long term management of the habitat.
- 8.8.132 As such the development when operational is considered to have a neutral impact on the lowland beech and yew woodland and mature trees during the operational phases.

Veteran Trees

- 8.8.133 As above an HMMP will secure the long term management of the veteran trees and ensure that they continue to be maintained. As such the development when operational is considered to have a neutral impact on veteran trees during the operational phases.

Fungi

- 8.8.134 The results of the fungal eDNA survey have not been issued at the time of writing. Depending on the results of the survey, mitigation for the fungal assemblage may be required. The results of the fungal eDNA survey will be presented in a supplementary submission.

Reptiles

- 8.8.135 The application will create multiple landscaped areas for wildlife across the site, including a large open space area of neutral grassland alongside a drainage basin. These features will have sloping banks and occasional water, making them ideal for reptiles to bask and forage. The habitats will be continually managed through the HMMP ensuring habitat continues to provide suitable spaces for reptiles
- 8.8.136 There are no operational impacts expected from the development on reptiles; therefore, the development, when operational, is considered to have a neutral impact on reptiles.

Breeding Birds

- 8.8.137 The application will be creating new nesting and foraging areas whilst also encouraging increased nesting on site with the improvements of habitats present, the HMMP will cover the long term management of the boxes likely the clearing and removal of old nests to ensure they can continue to be used for the lifetime of the management.
- 8.8.138 As there are no operational impacts expected from the scheme on breeding birds; therefore, the development, when operational, is considered to have a neutral impact on breeding birds.

Roosting Bats

- 8.8.139 The HMMP will cover the placement of bat boxes on site as well as their continued management and maintenance if needed.
- 8.8.140 Lighting from the residential dwellings could result in increased disturbance of bat roosts where these are potentially present in woodland alongside the housing. Currently, 359 number of trees have suitable

roosting features and are adjacent to the development. Lighting impacts can negatively affect bat roosts, and surveys of these are ongoing. However, lighting impacts on roosting bats during the operational phase can largely be addressed by a comprehensive lighting strategy.

- 8.8.141 The bat-sensitive lighting strategy will effectively avoid the disturbance of any bat roosts as a result of lighting during the operational phase of the development.
- 8.8.142 Overall, during the operational phase the development is considered likely to have a neutral impact on roosting bats.

Foraging and Commuting Bats

- 8.8.143 The HMMP will cover the continued management of the woodland and landscaping features on site. This will ensure that it continues to provide connectivity and foraging for bats in the long term.
- 8.8.144 The bat-sensitive lighting strategy will ensure that any significant increase in lux levels is avoided along key commuting routes and in any key foraging locations within the Detailed Application Site (Eastern Parcel).
- 8.8.145 The landscaping will be designed to provide increased foraging opportunities, especially around the proposed basin to the north, where pollen and nectar mixes will ensure increased invertebrate numbers for bats to feed on, this should offset the minimal loss of modified grassland and hedgerow found around the existing buildings.
- 8.8.146 Overall during the operational phase the development is considered likely to have a neutral impact on foraging and commuting bats.

Badger

- 8.8.147 Badgers have been recorded on site. During the operational phase badgers are unlikely to be affected by the residential development. They are likely to benefit from the foraging opportunities created by the proposed landscaping, and through the increased availability of drinking water in the SuDS basin.
- 8.8.148 During the operational phase the development is considered likely to have a neutral impact upon badgers.

Hedgehog

- 8.8.149 During operation, hedgehogs will benefit from increased foraging and refuge opportunities due to the enhanced planting around the site. However, they may face difficulties accessing garden spaces. To ensure that hedgehogs can access residential gardens, hedgehog-friendly concrete fence plates or their equivalent will be used, allowing hedgehogs to continue accessing these areas.
- 8.8.150 Overall during the operational phase the development is considered likely to have a neutral impact on hedgehogs.

Brown Hare

- 8.8.151 Brown hare were recorded on the Hybrid Application Site. The operational phase will result in the permanent loss of most of the open grassland habitat favoured by brown hare at the site, although similar habitat is readily available in the wider landscape.
- 8.8.152 As such the development is considered likely to have a neutral or slight impact on brown hares.

Invasive Non-native Species

- 8.8.153 The variegated yellow archangel will be removed during the construction phase. During the operational phase, implementation of the HMMP will ensure that any re-emergence of these species within the landscaping is appropriately managed and removed.
- 8.8.154 Overall during the operational phase the development is considered likely to have a neutral impact upon invasive non-native species.

Summary

- 8.8.155 Mitigation measures employed to reduce the level of effect of the development are detailed in Table 8.17 below.

Table 8.17. Ecological Mitigation Measures During Operation

Ecological Feature	Description of Potential Effect	Avoidance/ Mitigation Measures
Breckland SPA Chippenham Fen Ramsar Fenland SAC Breckland Farmland SSSI	Recreational impacts	This has been addressed within the HRA. To summarise, the application will provide on-site recreational spaces, dog off-lead areas, waste bins, and leaflets covering local walking routes. These measures are designed to encourage the use of both the site and the local area, reducing the need for residents to travel further to the designated sites.
Non-statutory sites	There are no likely impacts to non-statutory sites, outside of minor recreational pressure.	This is addressed by the measures outline above for the designated sites.
Lowland Beech and Yew Woodland (Priority Habitat) Mature Trees	Improper management	This will be addressed through the HMMP which will cover measures needed to achieve and maintain target condition for these habitats.
Veteran Trees	Improper management	This will be addressed through the HMMP which will cover measures needed to achieve and maintain target condition for veteran trees.

Ecological Feature	Description of Potential Effect	Avoidance/ Mitigation Measures
Reptiles	There is not likely effect from the operational phase of the development on reptiles	No mitigation required.
Birds	Improper management of nesting habitat and bird boxes	This will be addressed through the HMMP, which will cover the measures needed for the habitats on-site to achieve their target conditions. The document will also include details on how and where to install the required bird boxes, as well as the ongoing management of these boxes.
Roosting Bats	Lighting potential impacting roost locations	A bat-sensitive lighting strategy will be designed to include measures to avoid illumination of bat roosts beyond existing lux levels.
Foraging and Commuting Bats	Lighting potential impacting foraging and commuting routes	A bat-sensitive lighting strategy will be designed to ensure that bats can continue to use the site effectively without being disturbed by artificial lighting above existing levels.
Badger	No impacts during the operational phase	No mitigation required
Hedgehog	Lack of access to gardens for foraging	To ensure hedgehogs can access garden spaces, residential fences will be designed or fitted with hedgehog gaps or spaces. This will allow hedgehogs to move freely between gardens within the Hybrid Application Site.
Brown Hare	No impacts at the operational phase	No mitigation required
Invasive species	No impacts at the operational phase	The HMMP will ensure that regular site management checks are conducted to prevent the return of invasive species.

8.8.156 With the implementation of the above mitigation there should be no residual effects during the operational phase of the development.

8.9 Cumulative Assessment of Effects, Mitigation and Residual Effects

Detailed Application and Hybrid Application)

8.9.1 An assessment of the West Suffolk Council, East Cambridgeshire District Council and Suffolk County Council planning portals, searching back two years, has identified a limited number of developments within

the local area. Nearly all of these are small-scale conversions or extensions, alongside felling applications to remove TPO's or to demolish and build single residences. A period of two years was used to identify schemes that could potentially be under construction or starting construction at the same time as either the Detailed or Hybrid Applications.

8.9.2 There are three schemes which are of a nature, size and scale to have potential cumulative impacts. These are:

- Land Southwest of 98 to 138 Station Road Kennett Suffolk (18/00752/ESO), located 880 m to the north;
- Land At Former St Felix School Fordham Road Newmarket Suffolk (DC/23/0864/FUL), located 4.9 km to the west; and
- Hatchfield Farm Fordham Road Newmarket Suffolk CB8 7XL (DC/13/0408/OUT), located 6 km to the west.

Land Southwest of 98 To 138 Station Road

8.9.3 The scheme is known as Kennett Garden Village and is a residential-led development with associated employment and community uses (including care home and/or sheltered housing) and a new primary school with a pre-school (nursery) facility, supporting infrastructure and open space/landscaping. The scheme is currently under construction.

8.9.4 A HRA screening assessment has been undertaken for the scheme, and it was concluded that all impacts to designated sites could be screened out due to the distance of the site from designated sites, and the provision of extensive green infrastructure to support on-site recreation, with no likely significant effects. As all effects were avoided there can be no residual effects to consider in combination.

Land at Former St Felix School

8.9.5 A planning application for 50 dwellings, garages, associated infrastructure including substation and foul water pumping station and public open space (following demolition of existing building and hard standing), new vehicular access onto Fordham Road following closure of existing southbound access and re-location of tennis courts.

8.9.6 As part of the proposals, the scheme has undertaken its own shadow HRA. Recreational disturbance was the only pathway considered at the screening stage, and it was concluded that this could be screened out due to the small size of the scheme, the distance from the scheme to designated sites, the lack of parking available at Ramsar sites and the inclusion of green infrastructure within the scheme itself. As all effects were avoided there can be no residual effects to consider in combination.

Hatchfield Farm

8.9.7 A planning application for up to 400 dwellings plus associated open space (including areas of habitat enhancement), foul and surface water infrastructure, two accesses onto the A142, internal footpaths, cycle routes and estate roads.

- 8.9.8 An HRA screening assessment has been undertaken for the scheme, and it was concluded that all impacts to designated sites could be screened out as standard good practice measures will be in place to protect watercourses during the development and recreational impacts could be screened out due to the distance of the site from designated sites. As all effects were avoided there can be no residual effects to consider in combination.

General Developments

- 8.9.9 Whilst the above has focused on significant developments within the local area, a review has also taken place of more local small scale works that could have cumulative impacts at a local level.
- 8.9.10 Planning application DC/24/1394/FUL is for the installation of an automatic arm barrier with LED pole lights and concrete footing, this development is located 150 m east of the Hybrid Application Site boundary, with the status pending decision. If this was to proceed, there is potential for there to be a low level cumulative effect on bats from an increase in artificial lighting.

Site Enabling and Construction

- 8.9.11 The review of works on a wider and more local scale shows that there is unlikely to be any form of cumulative impact resulting from the construction phase of either the Detailed or Hybrid Application.

Operation

- 8.9.12 A review of works in the wider area indicates that it is unlikely there will be any cumulative impacts from the operational phases of either Application in conjunction with other schemes in the region.
- 8.9.13 There is limited potential for a low level cumulative impact on bat activity related to planning application DC/24/1394/FUL. However, with the proposed habitat retention, protection of a woodland buffer, implementation of a bat-sensitive lighting strategy, and landscaping measures, it is improbable that either the Detailed or Hybrid Application would result in significant lighting impacts on bats. Consequently, even if DC/24/1394/FUL were to affect commuting bats on a local scale, it would not result in an in-combination impact with either Application.

8.10 Summary of Effects

Detailed Application (Eastern Parcel)

- 8.10.1 There remains outstanding survey work for bats regarding the trees to be pruned or removed by the development and around bat foraging and commuting, however provided the mitigation measures stated above are carried out, there are unlikely to be any significant adverse effects upon ecological receptors as a result of the construction or operational phases of this development.

- 8.10.2 Furthermore, provided that the relevant avoidance, mitigation, and enhancement measures outlined in this report are implemented as part of the development, it is considered that the development will comply with relevant legislation and planning policy.

Hybrid Application (Eastern Parcel and Western Parcel)

- 8.10.3 There remains outstanding survey work for bats regarding the trees to be pruned or removed by the development and around bat foraging and commuting, however provided the mitigation measures stated above are carried out, there are unlikely to be any significant adverse effects upon ecological receptors as a result of the construction or operational phases of this development.
- 8.10.4 Furthermore, provided that the relevant avoidance, mitigation, and enhancement measures outlined in this report are implemented as part of the development, it is considered that the development will comply with relevant legislation and planning policy.

9.0 HERITAGE

9.1 Introduction

- 9.1.1 This Chapter reports the assessment of the likely significant environmental effects of development with respect to Built Heritage. It describes the methods used to assess the effects; the baseline conditions currently existing at the Application Sites and surrounding area; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.
- 9.1.2 The assessment takes into account current legislation, policy and technical guidance.
- 9.1.3 This Chapter should be read together with the Heritage Impact Assessments (HIAs) for each scenario, which are included at Appendix 9.1 and 9.2 to this Chapter of the ES.

9.2 Appendices

Table 9.1: Appendices for Chapter

Appendix No.	Document
9.1	Heritage Impact Assessment: Detailed Application
9.2	Heritage Impact Assessment: Hybrid Application

9.3 Legislation, Policy and Guidance

Legislative Framework

Planning (Listed Buildings and Conservation Areas Act) 1990

- 9.3.1 The Site includes one statutorily listed building and is not located in a conservation area. There is a substation within the Site which is likely to be considered to be curtilage listed. There are two other listed buildings within its setting.
- 9.3.2 With respect to this application, the applicable statutory provision is Section 66(1) the determination of applications.
- 9.3.3 As the proposals do not include any physical alterations to any listed building, Section 16 of the Act does not apply.

Planning Policy

National Planning Policy: National Planning Policy Framework (2024)

9.3.4 The salient paragraphs of the National Planning Policy Framework ('NPPF') (2024) are detailed in the table below.

Table 9.2: NPPF Paragraph Numbers

National Policy	Key Provisions
National Planning Policy Framework (NPPF) 2024	Chapter 16 (Conserving and enhancing the historic environment) <ul style="list-style-type: none"> • Paragraph 207 • Paragraph 208 • Paragraph 210 • Paragraphs 212-215 • Paragraph 219

West Suffolk Local Plan (consisting of the former Forest Heath and St Edmundsbury areas), Regional Planning Policy: Forest Heath Core Strategy Development Plan Document 2001-2026 (2010)

9.3.5 **Policy CS3** (Landscape Character and Historic Environment) states that

The quality, character, diversity and local distinctiveness of the District's landscape and historic environment shall be protected, conserved and, where possible, enhanced. Proposals for development will take into account the local distinctiveness and sensitivity to change of distinctive landscape character types, and historic assets and their settings. Landscape types are described in the Forest Heath Landscape Character Assessment (LCA). The Landscape Character Assessment will inform detailed assessment of individual proposals. All schemes should protect and seek to enhance overall landscape character, taking account of the key characteristics and distinctiveness of the landscape and the landscape setting of settlements.

9.3.6 It is noted that the policy pre-dates the first NPPF and does not explicitly contain the balancing provision applicable to heritage assets (discussed below).

9.3.7 **Policy CS5** states

All new development should be designed to a high quality and reinforce local distinctiveness. Design that does not demonstrate it has regard to local context and fails to enhance the character, appearance and environmental quality of an area will not be acceptable. Innovative design addressing sustainable design principles will be encouraged, if not detrimental to the character of the area. Regard should be taken of current good practice concerning design, and any local design guidance adopted by the Council.

Emerging Planning Policy: Emerging West Suffolk Local Plan submission draft (2024)

9.3.8 The West Suffolk Local Plan was submitted to the Secretary of State for independent examination on 24th May 2024.

9.3.9 The policies below are salient to heritage assessment.

9.3.10 **Policy SP14** (Historic Environment) states that:

The council will balance the need for development with the proper conservation, enhancement and enjoyment of the historic environment through a positive strategy to ensure that:

a. Heritage assets are sustained in viable uses which are compatible with their significance.

b. The wider social, economic, cultural and environmental benefits of conserving the historic environment are recognised and promoted.

c. The positive contribution made by the historic environment to local character and distinctiveness is understood and used to inform the design of new development so it respects its surroundings.

9.3.11 **Policy LP50** (Listed Buildings) covers works to listed buildings, including direct works as well as setting. The following provisions are relevant to this assessment:

Proposals to alter, extend or change the use of a listed building, or development affecting its setting, will be permitted where they:

a. Demonstrate a clear understanding of the significance of the building including the contribution made by its setting.

b. Contribute to the preservation of the building.

c. Are not detrimental to the building's character or any architectural, archaeological, artistic or historic features that contribute towards its significance.

d. Are of an appropriate scale, form, height, massing, and design which respects the existing building and its setting.

e. Use appropriate architectural details, materials and methods of construction which respect the character of the building.

g. Respect the setting of the listed building, including inward and outward views and how it is experienced and understood.

h. Respect the character, appearance and setting of a park, garden or training yard of historic or design interest, particularly where the grounds have been laid out to complement the design or function of the building. A curtilage and/or setting which is appropriate to the listed building, and which maintains its relationship with its surroundings should be retained.

i. Have regard to the present and future viability or function of the listed building.

[...]

All development proposals should provide a clear justification for the works, especially if these works would harm the listed building or its setting, so that the harm can be weighed against any public benefits. Where a proposal would result in harm to the significance of the asset the relevant tests of the National Planning Policy Framework (or successor document) will be applied.

The level of detail of any supporting information should be sufficient to understand the potential impact of the proposal on its significance and/or setting.

9.3.12 Policy LP52 (New Uses for Historic Buildings) is relevant because the proposals include the change of use of the grade II listed stable block. It states

Proposals for the adaptation of a historic building (including designated and non-designated heritage assets) to sustain a new use will only be permitted where the proposal will protect the significance of the building, and would not have a detrimental impact on:

- a. The character, appearance and setting of the building or significant elements of the buildings historic fabric.*
- b. The scale, height, massing, alignment, style and materials of the building.*
- c. The form, function and manner of construction of the building.*
- d. The present and future viability of the building.*

The level of detail of any supporting information should be proportionate to the importance of the building, the work proposed and sufficient to understand the potential impact of the proposal on its significance and/or setting.

Development proposals which result in harm to or loss of the significance of a designated heritage asset should provide clear and convincing justification for the works.

Where a proposal would result in harm to the significance of a designated heritage asset, the relevant tests of the National Planning Policy Framework, or successor document, will be applied.

The effect of an application on significance of a non-designated heritage asset will be taken into account in determining applications having regard to the scale of the harm and loss of significance.

Guidance and Material Considerations

9.3.13 Our approach to the assessment of effects follows the staged approach set out in policy, case law and best practice guidance, include. This is set out in full in the HIAs at Appendix 9.1 and 9.2, but in summary, includes the following best practice guidance:

- National Planning Practice Guidance (First Live 2014) (“NPPG”);
- Historic England, Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision-Taking in the Historic Environment (second Edition) (2015); and
- Historic England, Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (2017).

9.4 Historic Assessment

9.4.1 Montagu Evans has previously undertaken an appraisal of the potential for buildings within the Site to be curtilage listed.

9.4.2 This has concluded that none of the buildings are curtilage listed, with the exception of a substation to the east of the Eastern Application Site.

9.4.3 This was agreed by the West Suffolk Council (WDC).

9.4.4 As part of a permitted development application, it was agreed with the Council that *‘there is also an historic electricity building which provided electricity to the buildings within the park. Although not listed in its own right, it pre-dates July 1948 and was ancillary to the listed building and so, depending on the time that it ceased to serve the listed buildings, it may be considered curtilage listed.’*³¹

9.4.5 We have undertaken this assessment on the basis that the substation is a curtilage listed building, but note that no works are proposed to this.

9.5 Assessment Methodology and Significance Criteria

Relevant Elements of the Planning Applications

9.5.1 This Chapter provides an assessment of the impact of both Planning Applications on heritage assets within and in the setting of the Site.

9.5.2 There are three listed buildings within and in the vicinity of the Application Sites, comprising:

- Lanwades Hall (grade II) (outside of the application boundaries);

³¹ An email from the Conservation Officer dated 25th September 2024 as part of consultation on application DC/24/1157/P3CMA (LPA Ref)

- Stable Block 200m north-east of Lanwades Hall (grade II), which lies within the western part of the Site; and
- Pair of Lodge Cottages and linking gateway 250m north of Lanwades Hall (grade II) (outside of the application boundaries).

9.5.3 For the avoidance of doubt, neither Application Site falls within or near to a Conservation Area. There are no other designated or non-designated built heritage assets in the Application Sites or their setting. There is one curtilage listed building, which is a sub-station and lies near the eastern boundary of the Eastern Application Site. There are no works proposed to the building.

9.5.4 The term 'heritage receptor' is used within this assessment to describe a designated or non-designated heritage asset, as defined by the National Planning Policy Framework (2024) (the NPPF).

Scope of the Assessment

9.5.5 The assessment has considered all built heritage receptors which may experience a change to their setting or significance as a result of the development at each Application Site.

9.5.6 The assessment does not consider below-ground archaeological receptors, including scheduled monuments.

Extent of the Study Area

9.5.7 Site observations, a manual desk-based review of OS maps, characterisation studies and relevant heritage receptors were used to determine the study area. It has been informed by building locations and heights, topography and townscape features, and an understanding of the scale of the development for each Application Site. The wider, hybrid Site has been used to determine the potential extent within which receptors may experience a change to their setting or significance as a result of the proposals. For clarity, this same study area has been used for both assessments (full and hybrid).

Method of Baseline Data Collation

9.5.8 Planning policy requires an applicant to describe the significance of any heritage receptors affected by a proposed development, including any contribution made by their setting. 'Significance' (for heritage policy) is defined in the NPPF Annex 2 as:

'the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting.'

9.5.9 The term 'heritage value' is interchangeable in this assessment with 'heritage significance' and has been adopted to avoid conflation between 'EIA significance'. Heritage value is assessed against the criteria contained in Table 9.2; the categories allow some flexibility in their practical application to the facts of any

case. The typical examples for each category are indicative, mindful that the buildings/sites/areas cover a wide spectrum of character, history, features, and group relationships. The reader is referred to the qualitative assessment which outlines the particular nature of the value.

- 9.5.10 Paragraph 207 of the NPPF states that *the “level of detail [to describe the significance of heritage assets] should be proportionate to the assets’ importance”*. Great weight has been given to the conservation of all designated heritage receptors, although a gradation of value is appropriate. This is reinforced by the 2018 DCMS Principles for Selection of Listed Buildings which states *“listed buildings are graded to reflect their relative special architectural and historic interest”*:

Grade I buildings are of exceptional special interest;

Grade II buildings are particularly important buildings of more than special interest;*

Grade II buildings are of special interest, warranting every effort to preserve them.

- 9.5.11 The value of heritage receptors may be expressed with reference to their historical or architectural value identified in the Planning (Listed Buildings and Conservation Areas) Act 1990 (the '1990 PLBCA Act'), or the other values set out in the NPPF: archaeological, architectural, artistic or historic. For World Heritage Sites, the cultural value described within each site's Statement of Outstanding Universal Value forms part of its value.

- 9.5.12 Where a proposal may affect the surroundings in which the heritage receptor is experienced, a qualitative assessment is made of whether, how and to what degree setting contributes to the value of heritage receptors. The assessment is informed by the check-list approach contained in Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (2017) (hereafter 'GPA3'). Setting is defined in the NPPF as:

The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.

- 9.5.13 The heritage baseline articulates the contribution made by relevant aspects of setting towards value. Again, the level of detail is proportionate to the receptors' importance and no more than is sufficient to understand the potential impact of the proposal to their value; however, each heritage receptor's susceptibility to change derives from the particular nature of its heritage value, the existing character of its setting and the type of development proposed. The baseline assessment therefore describes what is sensitive about each heritage receptor and its setting without providing a sensitivity rating, which follows later in the assessment stage.

Table 9.3: Heritage Value

Heritage Value		
Value	Typical Criteria	Typical Examples
Very High	Building/site/area of international heritage value	World Heritage Sites, grade I statutorily listed buildings and registered parks and gardens, and some scheduled monuments, grade II* statutorily listed buildings and registered parks and gardens.
High	Building/site/area of national heritage value	Some scheduled monuments, Grade II* and II registered parks and gardens, grade II* and II statutorily listed buildings and conservation areas.
Medium	Building/site/area of lower national or particular local heritage value	Some grade II registered parks and gardens, grade II statutorily listed buildings and conservation areas.
Low	Building/site/area of local heritage value	Locally listed buildings (or equivalent non-designated heritage assets).
Very Low	Building/site/area of low local heritage value	Receptors not formally identified, but which may have a degree of value meriting consideration in planning decisions

Identification of Sensitive Receptors

- 9.5.14 The first stage in assessing the impact of development upon the heritage value of a receptor is to identify its sensitivity to change. Sensitivity is identified by calibrating the baseline value of the receptor with its susceptibility to change, defined as the ability of the heritage receptor to accommodate the type and/or nature of development without change to its value (see Table 9.3). In relation to heritage setting, paragraph 17 of GPA3 provides guidance on the relationship between heritage value and the potential impact of development upon that value by virtue of changes to its setting:
- 9.5.15 All heritage assets have significance, some of which have particular significance and are designated. The contribution made by their setting to their significance also varies. Although many settings may be enhanced by development, not all settings have the same capacity to accommodate change without harm to the significance of the heritage asset or the ability to appreciate it. This capacity may vary between designated assets of the same grade or of the same type or according to the nature of the change. It can also depend on the location of the asset: an elevated or overlooked location; a riverbank, coastal or island location; or a location within an extensive tract of flat land may increase the sensitivity of the setting (i.e. the capacity of

the setting to accommodate change without harm to the heritage asset's significance) or of views of the asset. This requires the implications of development affecting the setting of heritage assets to be considered on a case-by-case basis.

- 9.5.16 Cases of direct changes to the fabric of heritage receptors may be more likely to be susceptible to change, although this may be moderated according to the facts of the case. The qualitative text should clearly articulate where any deviation is made from this judgement.

Heritage Susceptibility to Change Criteria

- 9.5.17 The value of the receptor and its susceptibility are calibrated using the matrix at **Table 9.4**. Sensitivity is recorded in a verbal scale (high, medium or low), supported by a clear narrative linked to evidence from the baseline study and an assessment of susceptibility.

Table 9.4: Heritage Susceptibility to Change Criteria

Heritage Susceptibility to Change Criteria	
High	The setting of the receptor or receptor itself has a low ability to accommodate the type of change without change to its value.
Medium	The setting of the receptor or receptor itself has a moderate ability to accommodate the type of change without change to its value.
Low	The setting of the receptor or receptor itself has a high ability to accommodate the type of change without change to its value.

Table 9.5: Heritage Sensitivity (Nature of Receptor likely to be affected)

Heritage Sensitivity			
Receptor Value	Susceptibility of Receptor to Change		
	Low	Medium	High
Very Low	Low	Low	Low/Medium
Low	Low	Low/Medium	Medium
Medium	Low/Medium	Medium	Medium/High
High	Medium	Medium/High	High
Very High	Medium/High	High	High

Heritage Magnitude

- 9.5.18 The magnitude of change to the receptors' heritage value is then considered. In relation to setting impacts, although the change arising from the development may be large in physical scale or geographical extent, there may nonetheless be little or no impact on heritage value, and vice versa. The heritage impacts of the development have been considered in relation to the degree of change caused to those parts of the receptor and/or its setting which contribute to its heritage value.

- 9.5.19 The 'Operational' assessment has assessed the magnitude of impact at 15 years post completion of development, consistent with the Landscape and Visual Impact Assessment (LVIA) (see Chapter 10). This is to give the landscaping sufficient time to become established.
- 9.5.20 The judgement of magnitude considers the size or scale, geographical extent or duration and reversibility of the impact and whether the development:
- Conforms with the pattern, scale, mass, grain and historic features of the receptor;
 - Creates a loss or restoration of key features of the receptor;
 - Contributes to the identified receptor character; and
 - Accords with national, regional and local planning policy and guidelines.
- 9.5.21 The magnitude of impact is a qualitative judgement supported by the narrative text within the assessment. The professional judgement is quantified using criteria at Table 9.6.

Table 9.6: Magnitude of Impact

Heritage Magnitude of Impact	
High	Major change to the value of the receptor. Loss of or major alteration to key elements/features/characteristics that contribute to value. The duration of this impact may be permanent and non-reversible.
Medium	Moderate change to the value of the receptor. Alteration to one or more key elements/features/characteristics that contribute to value. The duration of this impact may be semi-permanent and partially reversible.
Low	Minor change to the value of the receptor. Minor alteration to one or more elements/features/characteristics that contribute to value. The duration of this impact may be temporary and reversible.
Very Low	Negligible change to the value of the receptor. Very minor alteration to one or more key elements/features/characteristics of the baseline. The duration of this impact may be temporary and reversible.
Nil	No change to the value of the receptor.

Significance of Effects

- 9.5.22 Likely effects are determined by combining the judgements of sensitivity and the magnitude of impact (Table 9.6). It is generally considered that moderate to major effects are 'significant' in the context of the EIA Regulations. Criteria defining the scale of effect is provided at Table 9.7.

Table 9.7: Likely effect on a heritage receptor matrix

Heritage Likely Effect on Receptor			
Magnitude	Sensitivity		
	Low	Medium	High
Nil	None	None	None
Very Low	Negligible	Negligible	Negligible / Minor
Low	Minor	Minor / Moderate	Moderate
Medium	Minor / Moderate	Moderate	Moderate / Major
High	Moderate	Moderate / Major	Major

- 9.5.23 The scale of effect requires a qualitative discussion to describe and elucidate this judgement to the reader. This is necessary because heritage assessment is not a strict quantitative process and some of these considerations will depend on expert judgements. Accordingly, there is an emphasis on qualitative text throughout the assessment to describe the receptors and the judgements in regard to the significance of the identified effects.

Table 9.8: Scale of an effect

Heritage Scale of an Effect	
Major	The change resulting from the impact of development upon the heritage value of the receptor would give rise to a very significant effect.
Moderate	The change resulting from the impact of the development upon the heritage value of the receptor would give rise to a significant effect.
Minor	The change resulting from the impact of the development upon the heritage value of the receptor would give rise to an effect, but this would not be significant.
Negligible	The change resulting from the impact of the development upon the heritage value of the receptor would give rise to a barely discernible effect. This would not be significant.
None	The change resulting from the impact of the development upon the heritage value of the receptor would have no effect.

- 9.5.24 For clarity, only impacts that are Moderate or Major are considered to be 'Significant' for the purposes of the ES Assessment.
- 9.5.25 Professional judgement is also required to determine the nature of the likely effects. For example, there will be cases where a high magnitude of impact produces a major scale of effect, on the basis that the component is prominent or noticeable, but notwithstanding that the quality of effect is beneficial as a consequence of design quality or other benefits. This approach arises most often as a consequence of major developments in areas positively identified for transformational change. Often, such impacts will have varied effects such that a hard and fast categorisation is finely balanced as between beneficial or harmful. In many instances, therefore, the final identification of impact and effect will turn on discursive analysis. Criteria defining the nature of effect is provided at Table 9.9.

Table 9.9: Nature of an effect

Heritage Nature of an Effect	
Beneficial	An enhancement to a receptor
Neutral	An effect that on balance, is neither beneficial nor adverse to a receptor, and therefore preserves the receptor.
Adverse	A harmful impact to a receptor

Limitations and Assumptions

- 9.5.26 The assessment of the 'Operational' effects is undertaken at year 15 post-completion, as this will allow for trees and landscaping to grow and become established. This is consistent with the LVIA.
- 9.5.27 For clarity, the Hybrid Application contains the Detailed Application, and the larger Site is used for the purpose of describing both Application Sites to avoid duplication.

9.6 Baseline ConditionsThe Site and Topography

- 9.6.1 The Site is located in Kentford, West Suffolk, and comprises land formerly used as the Animal Health Trust ('AHT') at Lanwades.

Historic Development

- 9.6.2 An account of the historic development of the Application Sites is set out at Section 3.0 of the HIAs. These are included at Appendix 9.1 and 9.2.

Built Heritage Receptor Baseline

- 9.6.3 A description of each of the salient heritage receptors, and a description of their heritage value (including the contribution made by setting to the significance of each asset and therefore the contribution to that significance formed by the Site) is set out at Section 4.0 of the HIAs for each of the two development scenarios (Detailed and Hybrid Applications). These are included at Appendix 9.1 and 9.2. Not all parts of the site fall within the setting of a heritage receptor, and not all aspects of the site that do fall within the setting of a receptor contribute to the significance of those assets.
- 9.6.4 In the table below, we summarise the heritage value of the identified heritage receptors in EIA terms.

Table 9.10: Heritage value of the identified heritage

No. on heritage receptor plan	Receptor name	Grade	Heritage Value
1	Pair of Lodge Cottages and linking gateway 250m north of Lanwades Hall	II	Medium
2	Lanwades Hall	II	Medium
3	Stable Block 200m north-east of Lanwades Hall	II	Medium
-	Substation	Curtilage listed	Low

9.7 Assessment of Effects, Mitigation and Residual Effects

Site Enabling and Construction

Detailed Application (Eastern Parcel)

Effects

- 9.7.1 The construction effects of the Detailed Application (Eastern Parcel) relate to the construction period anticipated to span 3 years, as stated in Chapter 5. The effects are likely to arise from large items of machinery, hoardings, the structures under construction and various operations. Chapter 10: Landscape and Visual Impact refers to the construction effects relating to the impact of visual effects. These effects are necessary steps in constructing the development on the and will be temporary.

Mitigation

- 9.7.2 During construction it is expected that that the principal contractor will be required to work in accordance with a Construction Environmental Management Plan (CEMP), giving construction plant schedules, working hours, proposals to minimise noise emissions and a programme of sample monitoring. This will be secured via a standard planning condition.

Residual Effects

- 9.7.3 In this assessment, construction effects, being temporary, are generally treated as less significant. This approach is consonant with established best practice. Heritage values, being enduring, are accepted to be capable of sustaining temporary intrusions without loss of intrinsic value. Conditions on any consent would

likely be applied to minimise any disruption to amenity, including the experience of the setting of heritage receptors, more generally.

- 9.7.4 The construction period is local to the Site, and temporary.
- 9.7.5 Areas of the construction works may be visible in the setting of heritage receptors. Where these occurred, they would include vehicular movements, hoardings, and other construction infrastructure.
- 9.7.6 This would not affect the intrinsic heritage value of any receptors.
- 9.7.7 There would be a temporary imposition upon the setting of the grade II listed Stables due to the visibility of construction works in its environs, and through the use of Sir Graham Kirkham Avenue for construction access. This would be understood as the necessary preliminary stages in the redevelopment of the Site.
- 9.7.8 Lanwades Hall is considered to have a Low susceptibility to the construction phase, and a Low/Medium sensitivity.
- 9.7.9 The Magnitude of Impact would be Nil.
- 9.7.10 The effect would be **Nil**. This would be indirect, local and temporary.
- 9.7.11 The Stable Block 200m north-east of Lanwades Hall is considered to have a Low susceptibility to the construction phase, and a Low/Medium sensitivity.
- 9.7.12 The Magnitude of Impact would be Very Low, as the Stables lie within the Site redline and are therefore closer to the works.
- 9.7.13 The effect would be **Negligible Adverse**. This would be indirect, local and temporary.
- 9.7.14 The Pair of Lodge Cottages and linking gateway 250m north of Lanwades Hall are considered to have a Low susceptibility to the construction phase, and a Low/Medium sensitivity.
- 9.7.15 The Magnitude of Impact would be Nil.
- 9.7.16 The effect would be **Nil**. This would be indirect, local and temporary.
- 9.7.17 The Substation is considered to have a Low susceptibility to the construction phase, and a Low sensitivity.
- 9.7.18 The Magnitude of Impact would be Nil.
- 9.7.19 The effect would be **Nil**. This would be indirect, local and temporary.
- 9.7.20 This is because each of the receptors is capable of standing a temporary imposition without a change to their value.

Table 9.11: Receptors

Receptor	Susceptibility	Sensitivity	Magnitude of Impact	Nature of impact	Significant?
Pair of Lodge Cottages and linking gateway 250m north of Lanwades Hall	Low	Low/ Medium	Nil	Nil	Not Significant
Lanwades Hall	Low	Low/ Medium	Nil	Nil	Not Significant
Stable Block 200m north-east of Lanwades Hall	Low	Low/ Medium	Very Low	Negligible Adverse	Not Significant
Substation	Low	Low	Nil	Nil	Not Significant

Hybrid Application (Eastern Parcel and Western Parcel)*Effects*

- 9.7.21 The construction effects of the Hybrid Application relate to the construction period anticipated to span 5 years, as stated in Chapter 5. The effects are likely to arise from large items of machinery, hoardings, the structures under construction and various operations. Chapter 10: Landscape and Visual Impact refers to the construction effects relating to the impact of visual effects. These effects are necessary steps in constructing the development on the Site and will be temporary.

Mitigation

- 9.7.22 During construction it is expected that the principal contractor will be required to work in accordance with a Construction Environmental Management Plan (CEMP), giving construction plant schedules, working hours, proposals to minimise noise emissions and a programme of sample monitoring. This will be secured via a standard planning condition.

Residual Effects

- 9.7.23 In this assessment, construction effects, being temporary, are generally treated as less significant. This approach is consonant with established best practice. Heritage values, being enduring, are accepted to be capable of sustaining temporary intrusions without loss of intrinsic value. Conditions on any consent would of course be applied to minimise any disruption to amenity, including the experience of the setting of heritage receptors, more generally.
- 9.7.24 The construction period is local to the Site, and temporary.
- 9.7.25 Areas of the construction works may be visible in the setting of heritage receptors. Where these occurred, they would include vehicular movements, hoardings, and other construction infrastructure.
- 9.7.26 This would not affect the intrinsic heritage value of any receptors.
- 9.7.27 There would be a temporary imposition upon the setting of the grade II listed Stables due to the visibility of construction works in its environs, and through the use of Sir Graham Kirkham Avenue for construction access. This would be understood as the necessary preliminary stages in the redevelopment of the Site.
- 9.7.28 There would also be some awareness of construction works to the east of the approach to Lanwades Hall, and some views out through the boundary planting and fence to the east. It is also likely that some of the more distant works would be visible above the 2m acoustic fencing that partially surrounds the boundary with the Hall, and that there may be some audible effects.
- 9.7.29 Lanwades Hall is considered to have a Low susceptibility to the construction phase, and a Low/Medium sensitivity.
- 9.7.30 The Magnitude of Impact would be Very Low.
- 9.7.31 The effect would be **Negligible Adverse**. This would be indirect, local and temporary.
- 9.7.32 The Stable Block 200m north-east of Lanwades Hall is considered to have a Low susceptibility to the construction phase, and a Low/Medium sensitivity.
- 9.7.33 The Magnitude of Impact would be Very Low, as the Stables lie within the Site redline and are therefore closer to the works. There would be no additional effect on the Stables as a result of the outline portion of the proposals.
- 9.7.34 The effect would be **Negligible Adverse**. This would be indirect, local and temporary.
- 9.7.35 The Pair of Lodge Cottages and linking gateway 250m north of Lanwades Hall are considered to have a Low susceptibility to the construction phase, and a Low/Medium sensitivity.
- 9.7.36 The Magnitude of Impact would be Very Low.
- 9.7.37 The effect would be **Negligible Adverse**. This would be indirect, local and temporary.
- 9.7.38 The Substation is considered to have a Low susceptibility to the construction phase, and a Low sensitivity.

- 9.7.39 The Magnitude of Impact would be Nil.
- 9.7.40 The effect would be **Nil**. This would be indirect, local and temporary.
- 9.7.41 This is because each of the receptors is capable of standing a temporary imposition without a change to their value.

Table 9.12:

Receptor	Susceptibility	Sensitivity	Magnitude of Impact	Nature of impact	Significant?
Pair of Lodge Cottages and linking gateway 250m north of Lanwades Hall	Low	Low/ Medium	Very Low	Negligible Adverse	Not significant
Lanwades Hall	Low	Low/ Medium	Very Low	Negligible Adverse	Not significant
Stable Block 200m north-east of Lanwades Hall	Low	Low/ Medium	Very Low	Negligible Adverse	Not significant
Substation	Low	Low	Nil	Nil	Not Significant

Operation

Detailed Application (Eastern Parcel)

Effects

- 9.7.42 This section assesses the operational effects of the Detailed Application on the three identified heritage receptors. As stated in the methodology, the operational assessment is taken at 15 years post-completion, so as the landscaping proposed is mature.

Pair of Lodge Cottages and linking gateway 250m north of Lanwades Hall (grade II)

- 9.7.43 The significance of this receptor and the contribution made by its setting is described at paragraphs 4.103-4.117 of the HIA at Appendix 9.1.

- 9.7.44 This finds that none of the land within the Site boundary for the Detailed Application forms part of the setting of the Lodge Cottages and linking gateway.
- 9.7.45 This being the case, the Detailed Application would not result in any change to setting of the receptor.
- 9.7.46 The receptor is considered to have a Low susceptibility to the operational phase, and a Low/Medium sensitivity.
- 9.7.47 The Magnitude of Impact would be Nil.
- 9.7.48 The effect would be **Nil**. This would be indirect, local and temporary.

Lanwades Hall (grade II)

- 9.7.49 The significance of this receptor and the contribution made by its setting is set out at paragraphs 4.10-4.77 the HIA at Appendix 9.1.
- 9.7.50 Within the Site, Plot 4 has a setting relationship with the listed building.
- 9.7.51 Works within Plot 7 would have no effect on the setting of the receptor.
- 9.7.52 The effect of Detailed Application on the setting and heritage value of Lanwades Hall is set out at paragraphs 5.8-5.42 of the HIA at Appendix 9.1. This finds that

Within this plot,[4] the existing poor-quality AHT building would be removed. As noted at baseline stage, this is not a prominent aspect in the setting of the listed building, but it is possible that there are some views through the tree cover to the upper parts, and the removal of this as a detracting element would be a positive change to the setting of the listed building.

To the south of Lanwades Hall, residential development of less than two storeys would be located closest to the boundary. The scale and density of development has been carefully considered for this parcel, with 28 dwellings within a site area of 1.19 ha. The existing tree-lined avenue at the east of the plot would be preserved, with bulb planting beneath the trees, though this would not likely be visible.

This would be separated from the listed building by the existing boundary treatment of 2m, and the dense vegetation which lines the boundary to the south-east of the house.

The frontage to the beech avenue to the west would be fragmented, with gaps between buildings creating intermittent views through between the development and the open land. To the east, the frontage to Sir Graham Kirkham Avenue would be semi-continuous – though this is oriented away from the listed building and would not affect its setting.

The character of the land would change from the existing large-footprint laboratory complex of built form within car parking to a residential enclave. Whilst the extent of development would increase (and the openness in the northern part of this plot correspondingly decrease), the character of the residential development would have a more welcoming character due to the domestic scale and character.

Due to the changes in topography, it is possible that there may be some views from the south of Lanwades Hall towards the new development, filtered through the tree line.

This would be limited to some peripheral visibility, which would not affect the intrinsic significance of the listed building, or the understanding of its status within its defined, primary setting.

Conversely, views from this part of the Site towards the top of Lanwades hall (the tower and Cupola) will be maintained as an attractive filtered background element and the opportunity to enjoy these increased through the opening up of the Site.

The beech avenue to the south of Lanwades Hall would be preserved as open space, though we note that there is presently hit-and-miss fencing along the southern boundary, which limits views into this part of the Site. A general awareness of the established vegetation beyond remains, however, and the character of this would be preserved.

There is the potential for views of the development to the immediate south of Lanwades Hall – some roofscapes may be visible through the treeline and would bring a sense of built form closer to the listed building. This would have a slight urbanising effect on its setting, which would detract from the rural character of its context.

- 9.7.53 The dense woodland frontages to the east and south mean that this parcel would be understood independently of the wider development, forming a small enclave to the south of the listed building, and accessed via Sir Graham Kirkham Avenue.
- 9.7.54 We identify no change to the setting of the listed building as a result of development in Plot 5 (paragraphs 5.24-5.28)
- 9.7.55 As a result of the development of Plot 6, the HIA found the following at paragraphs 5.40-5.42:

There is the potential for some limited views through from the environs of Lanwades Hall towards this parcel of development. Where these occur, they would be filtered through the dense tree cover, and understood as lying outwith the immediate enclave of the Hall. They are no more impactful than any similarly glimpsed views of the existing buildings.

The houses provide a more appealing and welcoming form of development than the AHT buildings, and the permeability of this part of the Site would also be improved.

As a whole, the change to this parcel would not be a notable change to the setting of the listed building. However, where any visibility were to occur, the developed scenario would be more attractive and appropriate in its wider vicinity than the existing AHT buildings. While not readily noticeable, this would be a very slight enhancement to the building's setting.

- 9.7.56 The receptor is considered to have a Low susceptibility to the operational phase, and a Low/Medium sensitivity.
- 9.7.57 The Magnitude of Impact would be Very Low.
- 9.7.58 The effect would be **Negligible Adverse**, as a result of the suburbanising effect of built form close to the south of the receptor, in the setting of the Hall. In reaching this judgment, we have had regard to the proposed building heights, which decrease towards the northern boundary. This would be indirect, local and permanent.
- 9.7.59 The effect is Negligible because whilst perceptible, the proposals would not be readily noticeable, and would not impinge on any key aspects of the receptor's heritage value.

Stable Block 200m north-east of Lanwades Hall (grade II)

- 9.7.60 The significance of this receptor and the contribution made by its setting is set out at paragraphs 4.78-4.102 of the HIA at Appendix 9.1.
- 9.7.61 Within the Site, Plots 5 and 6 have a setting relationship with the listed building.
- 9.7.62 Works within Plots 4 and 7 would have no effect on the setting of the receptor.
- 9.7.63 The effect of the Detailed Application on the setting and heritage value of the Stable Block is set out at paragraphs 5.43-5.71 of the HIA (see Appendix 9.1). This should be read in full in conjunction with this ES, but for reader's ease, the concluding paragraphs of that narrative assessment is reproduced here:

Taken as a whole, the proposals would introduce a more suburban character to the setting of the listed building. However, this change would be from the existing business park complex to the south, which is a detracting feature in the building's setting, and would also improve the opportunity for more people to appreciate the historic and architectural interest of the Stables through the activation of the Site and the encouragement of movement along new pedestrian and cycle ways, and the increased use of the paddock to the north for recreational purposes.

These aspects are, in our view, an improvement from the baseline scenario.

The change in character of the paddock would erode slightly the legibility of this part of the Stables' setting as a paddock associated with an equestrian use. But this needs to be considered as part of the proposals as a whole.

The significance of the listed building would be preserved.

- 9.7.64 The receptor is considered to have a Low susceptibility to the operational phase, and a Low/Medium sensitivity.
- 9.7.65 The Magnitude of Impact would be Very Low.
- 9.7.66 The effect would be **Negligible Neutral**. This would be indirect, local and permanent.
- 9.7.67 The effect is Negligible Neutral because whilst perceptible, the proposals would not be readily noticeable, and would not impinge on any aspects of the receptor's heritage value.

Substation

- 9.7.68 The Substation would not be physically affected by the proposals. Its limited heritage value is derived from its association with Lanwades Hall, which is not immediately evident. There would be no change to its fabric, or to its relationship with the Hall.
- 9.7.69 The Substation is considered to have a Low susceptibility to the operational phase, and a Low sensitivity.
- 9.7.70 The Magnitude of Impact would be Nil.
- 9.7.71 The effect would be **Nil**. This would be indirect, local and temporary.

Mitigation

- 9.7.72 The mitigation relevant to heritage receptors is intrinsic to the design, comprising the height, scale, bulk, layout and massing of the proposals, which are represented in the scheme drawings and parameter plans. This includes consideration to the siting and heights of blocks close to the identified receptors, as well as the maintenance of open space in some sensitive areas, for example the paddock.

Residual Effects

- 9.7.73 The residual effect of Detailed Application on built heritage receptors will be the same as those set out in the assessment of effects. This is because mitigation measures have been incorporated into the scheme over the course of the design process including the siting, scale and materiality of development.
- 9.7.74 There would be no change to the conclusions as design mitigation is embedded at the Operational Stage.
- 9.7.75 The residual effects of the Operational Stage for the Detailed Application are summarised in the Table below.

Table 9.13:

dReceptor	Susceptibility	Sensitivity	Magnitude of Impact	Nature of impact	Significant?
Pair of Lodge Cottages and linking gateway 250m north of Lanwades Hall	Low	Low/ Medium	Nil	Nil	Not significant
Lanwades Hall	Low	Low/ Medium	Very Low	Negligible Adverse	Not significant
Stable Block 200m north-east of Lanwades Hall	Low	Low/ Medium	Very Low	Negligible Neutral	Not significant
Substation	Low	Low	Nil	Nil	Not Significant

Hybrid Application (Eastern and Wester Parcels)

- 9.7.76 As stated in the methodology, the operational assessment is taken at 15 years post-completion, which allows for the proposed landscaping to mature.
- 9.7.77 For the avoidance of doubt, there would be no change to the effects identified to receptors under the Detailed Application as a result of the Outline proposals coming forward in conjunction under the Hybrid Application. Therefore the effects identified to heritage receptors as a result of the 'full' part of the Hybrid Application will be the same.

*Effects***Pair of Lodge Cottages and linking gateway 250m north of Lanwades Hall (grade II)**

- 9.7.78 The significance of this receptor and the contribution made by its setting is set out at paragraphs 4.103-4.117 the HIA at Appendix 9.2.
- 9.7.79 Within the Site, Plot 2 has a setting relationship with the listed building.
- 9.7.80 Works within Plots 1, 3, 4, 5, 6 and 7 would have no effect on the setting of the receptor.

- 9.7.81 The effect of the Hybrid Application on the setting and heritage value of the Lodge Cottages is set out at paragraphs 6.28-6.35. of the HIA at Appendix 9.2. This concludes that

Overall, we identify a very limited impact upon the setting of the gatehouses as a result of the outline parcels of the hybrid application that are located to the immediate west of the boundary with the Lanwades Hall site.

These would be experienced over a short duration, and would not affect the intrinsic significance of the listed building.

There would be no effect on the gatehouses' setting or significance as a result of the detailed portion of the hybrid proposals to the west as these plots do not contribute to their setting.

As a whole, we find a net slight adverse effect as a result of the development within the building's setting in Plot 2.

- 9.7.82 The receptor is considered to have a Low susceptibility to the operational phase, and a Low/Medium sensitivity.
- 9.7.83 The Magnitude of Impact would be Very Low.
- 9.7.84 The effect would be **Negligible Adverse**. This would be indirect, local and permanent.
- 9.7.85 The effect is Negligible Adverse because whilst perceptible, the proposals would not be readily noticeable, and would not impinge on any key aspects of the receptor's heritage value.

Lanwades Hall (grade II)

- 9.7.86 The significance of this receptor and the contribution made by its setting is set out at paragraphs 4.10-4.77 the HIA at Appendix 9.2.
- 9.7.87 Within the Site, Plots 2, 3, 4, 5 and 6 have a setting relationship with the listed building.
- 9.7.88 Works within Plots 1 and 7 would have no effect on the setting of the receptor.
- 9.7.89 The effect of the Hybrid Application on the setting and heritage value of Lanwades Hall is set out at paragraphs 6.8-6.27 of the HIA at Appendix 9.2. This concludes that

The overall effect of the development of Plots 2 and 3 would be that there would also be filtered views toward this part of the development experienced through the 5-metre landscaping buffer which defines the northern part of the boundary between the hall and site and across the southern part of the boundary. These would also be seen in the context of the existing 2m high acoustic fencing, which screens intervisibility between the listed building and this part of the Site. Once mature, the boundary planting would provide an effective screen.

Where this occurs, the impression of Lanwades Hall as an isolated country house would be slightly eroded when experienced from some limited parts of its immediate setting through the introduction of a more suburban character of development in this part of its setting. Whilst the Site itself makes no particular contribution to the building's setting, the impression of openness in the wider context would be reduced.

This would cause a very low level of harm to the listed building through the change in character to some of the land which forms its setting. Set in context, the principal aspects of setting would not change – the house would remain accessed via its defined driveway, and the landscaped gardens to the east would be unaffected.

The harm we identify is capable of some mitigation through detailed design – in terms of the spacing between buildings, materiality of roof treatments, and orientation of buildings.

The intrinsic significance of the listed building would not change.

- 9.7.90 The receptor is considered to have a Low susceptibility to the operational phase, and a Low/Medium sensitivity.
- 9.7.91 The Magnitude of Impact would be Low.
- 9.7.92 The effect would be **Minor Adverse**. This would be indirect, local and permanent.
- 9.7.93 The effect is Minor Adverse because whilst the intrinsic heritage value of the receptor would not change, but an element of its setting, which makes a positive contribution to the way that it is experienced, would be adversely affected. The adverse impact would be slightly greater for the Hybrid Application than for the Detailed Application, because a wider part of the receptor's setting would be changed, and have a more suburban character albeit at a distance and not readily visible.

Stable Block 200m north-east of Lanwades Hall (grade II)

- 9.7.94 The significance of this receptor and the contribution made by its setting is set out at paragraphs 4.78-4.101 of the HIA at Appendix 9.2.
- 9.7.95 Within the Site, Plots 5 and 6 have a setting relationship with the listed building.
- 9.7.96 Works within Plots 4 and 7 would have no effect on the setting of the receptor. Correspondingly, the Outline aspects of the proposals within plot numbers 1, 2 and 3 would have no effect on the receptor.
- 9.7.97 The effect of the Hybrid Application proposals on the setting and heritage value of the Stable Block is set out at paragraphs 6.37-6.41 of the HIA. This should be read in full in conjunction with this ES, but for reader's ease, we reproduce the concluding paragraphs of that narrative assessment here:

6.39 The dense landscaping buffers along Sir Graham Kirkham Avenue and to the east of the tree lined avenue (south of Lanwades Hall) contribute further to the sense of enclosure, and the experience of the stables is contained entirely within the western portion of the Site.

6.40 The Outline aspects of the proposals do not therefore change the assessment from the conclusions of the detailed scheme.

6.41 We therefore find that the hybrid proposals would not cause harm to the setting or by extension significance of the grade II listed Stable. The receptor is considered to have a Low susceptibility to the operational phase, and a Low/Medium sensitivity.

9.7.98 The Magnitude of Impact would be Very Low.

9.7.99 The effect would be **Negligible Neutral**. This would be indirect, local and permanent.

9.7.100 The effect is Negligible Neutral because whilst perceptible, the proposals would not be readily noticeable, and would not impinge on any aspects of the receptor's heritage value.

Substation

9.7.101 The Substation would not be physically affected by the proposals. Its limited heritage value is derived from its association with Lanwades Hall, which is not immediately evident. There would be no change to its fabric, or to its relationship with the Hall.

9.7.102 The Substation is considered to have a Low susceptibility to the operational phase, and a Low sensitivity.

9.7.103 The Magnitude of Impact would be Nil.

9.7.104 The effect would be **Nil**. This would be indirect, local and temporary.

Mitigation

9.7.105 The mitigation relevant to heritage receptors is intrinsic to the design, comprising the height, scale, bulk, layout and massing of the proposals, which are represented in the scheme drawings and parameter plans. Existing tree planting along the boundaries will mature, and has been considered as part of the assessment.

9.7.106 Design mitigation is embedded into parameters.

Residual Effects

9.7.107 The residual effects of Hybrid Application on built heritage receptors will be the same as those set out in the assessment of effects. This is because mitigation measures have been incorporated into the scheme over the course of the design process including the siting, scale and materiality of development.

9.7.108 At Operational Stage, the detailed design of the Outline portion of the Site would have been subject to a Reserved Matters application.

9.7.109 The Operational Effects of Hybrid Application are summaries within in the table below.

Table 9.14: Operational Effects of the Hybrid Application

Receptor	Susceptibility	Sensitivity	Magnitude of Impact	Nature of impact	Significance of effect
Pair of Lodge Cottages and linking gateway 250m north of Lanwades Hall	Low	Low/Medium	Very Low	Negligible Adverse	Not significant
Lanwades Hall	Low	Low/Medium	Low	Minor Adverse	Not Significant
Stable Block 200m north-east of Lanwades Hall	Low	Low/Medium	Very Low	Negligible Neutral	Not Significant
Substation	Low	Low	Nil	Nil	Not Significant

9.8 Cumulative Assessment of Effects, Mitigation and Residual Effects

Site Enabling and Construction

Detailed Application (Eastern Parcel)

- 9.8.1 There are no cumulative schemes which would affect the setting of the identified built heritage receptors. Correspondingly, there would be no change to the conclusions in the cumulative scenario.
- 9.8.2 The effects would remain as identified at Construction Stage for the Detailed Application.

Hybrid Application (Eastern Parcel and Western Parcel)

- 9.8.3 There are no cumulative schemes which would affect the setting of the identified built heritage receptors. Correspondingly, there would be no change to the conclusions in the cumulative scenario.
- 9.8.4 The effects would remain as identified at Construction Stage for the Detailed Application.

9.9 Cumulative Assessment of Effects, Mitigation and Residual Effects

Operation

Detailed Application (Eastern Parcel)

- 9.9.1 There are no cumulative schemes which would affect the setting of the identified built heritage receptors. Correspondingly, there would be no change to the conclusions in the cumulative scenario.
- 9.9.2 The effects would remain as identified at Operational Stage for the Detailed Application.

Hybrid Application (Eastern Parcel and Western Parcel)

- 9.9.3 There are no cumulative schemes which would affect the setting of the identified built heritage receptors. Correspondingly, there would be no change to the conclusions in the cumulative scenario.
- 9.9.4 The effects would remain as identified at Operational Stage for Hybrid Application.

9.10 Summary

- 9.10.1 The conclusions of the assessments are set out in Table 9.15 below.

Table 9.15: Summary of Table

Receptor	Susceptibility	Sensitivity	Magnitude of Impact (Detailed App)	Magnitude of Impact (Hybrid App)	Nature of Impact (Detailed App)	Nature of impact (Hybrid App)	Significance of effect (Detailed App)	Significance of effect (Hybrid App)
Pair of Lodge Cottages and linking gateway 250m north of Lanwades Hall	Low	Low/Medium	Nil	Very Low	Nil	Negligible Adverse	Not significant	Not significant
Lanwades Hall	Low	Low/Medium	Very Low	Low	Negligible Adverse	Minor Adverse	Not Significant	Not Significant
Stable Block 200m north-	Low	Low/Medium	Very Low	Very Low	Negligible Neutral	Negligible Neutral	Not Significant	Not Significant

east of Lanwa des Hall								
Substat ion	Low	Low	Nil	Nil	Nil	Nil	Nil	Not Significa nt

10.0 LVIA

10.1 Introduction

- 10.1.1 This Chapter reports the assessment of the likely significant environmental effects of the development with respect to Landscape and Visual Impact, applying a methodology which identifies and evaluates the potential effects of the development on the landscape and on the visual experiences of people in the area. The Chapter describes the methods used to assess the effects; the baseline conditions currently existing at the Site and surrounding area; the mitigation measures required to prevent, reduce or offset any predicted significant adverse effects; and the likely residual effects after these measures have been adopted.
- 10.1.2 This Chapter reports the likely residual landscape and visual effects resulting from two Planning Applications:
- Detailed Application (Eastern Parcel); and
 - Hybrid Application (Eastern and Western Parcel)
- 10.1.3 The assessment takes account of current legislation, policy and technical guidance, and relevant published landscape character assessments.
- 10.1.4 This Chapter should be read alongside introductory Chapters 1 to 5 and Chapter 9 (Heritage) of this ES.

10.2 Appendices

- 10.2.1 The Chapter is supported by six Appendices.

Table 10.1: Appendices for Chapter 10

Appendix No.	Document
10.1	Supporting Figures
10.2	Site Field Photography
10.3	Representative Viewpoints
10.4	Extract of Suffolk Landscape Character Assessment – LCT 13 Rolling Estate Chalklands
10.5	Extracts of West Suffolk Landscape Character Assessment - LCA A5: Kennett Valley & LCA G1: Newmarket & Fordham Chalklands
10.6	Extract of Review of local landscape designations West Suffolk District – Local Valued Landscape (LVL) 5 Kennett Valley

10.3 Legislation, Policy and Guidance

Legislative Framework

- 10.3.1 The European Landscape Convention (ELC)³² provides a basis for closer co-operation on landscape issues across Europe and was signed and ratified in the UK. This recognition of landscape matters raises their profile and the ELC is intended to improve approaches to the planning, management and protection of landscapes throughout Europe.
- 10.3.2 The ELC defines landscape as ‘*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*’ and it includes townscape, as well as all types of rural landscape.

Planning Policy

- 10.3.3 Landscape planning policies, guidance and designations can:
- provide an indication of the value attributed to landscape, townscape and visual resources;
 - promote good design and seek to ensure that development is appropriate to its context; and
 - ensure that development maintains or enhances the unique character of an area and protects visual amenity.

National Planning Policy

- 10.3.4 The following national planning policy is relevant to the development:

Sections 12 and 15 of the National Planning Policy Framework³³ (NPPF).

Local Planning Policy

- 10.3.5 The development plan for West Suffolk Council (consisting of the former Forest Heath and St Edmundsbury areas) comprises:
- Core Strategy (2010) former FHDC area³⁴;
 - Site Allocations Local Plan (SALP)³⁵; and

³² European Landscape Convention of the Council of Europe (2000)

³³ Department for Levelling Up, Housing and Communities, (2024) *National Planning Policy Framework*

³⁴ Forest Heath District Council, (2010) *Core Strategy Development Plan Document 2001-2026 (with housing projected to 2031)*

³⁵ Forest Heath District Council, (2019) *Site Allocations Local Plan (SALP)*

- Joint Development Management Policies Document³⁶

10.3.6 Policies of relevance to landscape and visual matters include:

- Policy CS 3 Landscape Character and the Historic Environment requires that the quality, character, diversity and local distinctiveness of the District's landscape and historic environment is protected, conserved and, where possible, enhanced;
- Policy CS 5 Design Quality and Local Distinctiveness requires that new development should be designed to a high quality and reinforce local distinctiveness;
- Policy DM2: Creating Places - Development Principles and Local Distinctiveness requires that all development should recognise and address the key features, characteristics, landscape/townscape character, local distinctiveness and special qualities of the area and/or building and, where necessary, prepare a landscape/townscape character appraisal to demonstrate this;
- Policy DM5: Development in the Countryside states that proposals for economic growth and expansion of all types of business and enterprise that recognises the intrinsic character and beauty of the countryside will be permitted where there will be no significant detrimental impact on the historic environment, character and visual amenity of the landscape; and
- Policy DM13: Landscape Features states that development will be permitted where it will not have an unacceptable adverse impact on the character of the landscape, landscape features, wildlife, or amenity value.

Emerging Local Planning Policy

10.3.7 The West Suffolk Local Plan³⁷ was submitted to the Secretary of State for independent examination on 24th May 2024. Draft policies of relevance to landscape and visual matters include:

- Policy SP3: Design requires that proposals for new development must consider local character and context;
- Policy SP5: Locally valued landscape states that development proposals within or next to areas designated as locally valued landscapes (LVL) will be assessed based on their specific landscape and visual impact, taking into account any mitigation proposals. LVL5 Kennett Valley is located to the east and west of the Site (Appendix 10.6);

³⁶ Forest Heath and St Edmundsbury, (2015) *Joint Development Management Policies Document*

³⁷ West Suffolk Council (2024) *West Suffolk Local Plan Submission Draft (Regulation 19)*

- Policy LP14: Landscape requires that all proposals must be informed by, and be sympathetic to, the character of the landscape as described in the West Suffolk and Suffolk Landscape Character Assessments and should, take into account and avoid detrimental effects on key landscape features and their legibility, local distinctiveness, visual amenity, key views, tranquillity and the nocturnal character of the landscape; and
- Policy LP18 Development in the countryside states that land designated on the policies map as countryside is a valued asset within the district and will be protected from unsustainable development. Proposals for economic growth and expansion of all types of business and enterprise will be permitted where they recognise the intrinsic character and beauty of the countryside. the scale of development is sensitively integrated into the surrounding area and evidence is submitted through a landscape and visual impact assessment and any impacts are mitigated and the distinctive character of any settlement and its setting is maintained.

Guidance

10.3.8 The following guidance is relevant:

- Planning Policy Guidance (PPG)³⁸;
- The National Design Guide³⁹;
- Guidelines for Landscape and Visual Impact Assessment (3rd edition); subsequently referred to as 'GLVIA3'⁴⁰;
- Notes and Clarifications on Aspects of Guidelines for Landscape and Visual Impact Assessment Third edition (GLVIA3)⁴¹;
- An Approach to Landscape Character Assessment: Natural England (2014)⁴²;
- Assessing landscape value outside national designations Technical Guidance Note 02/2⁴³;
- Visual Representation of Development Proposals – Landscape Institute Technical Guidance Note (TBN) 06/19⁴⁴;

³⁸ Department for Levelling Up, Housing and Communities (2024) *National Planning Policy Guidance – Natural Environment*

³⁹ Ministry of Housing Communities & Local Government (2021) *National Design Guide*

⁴⁰ Landscape Institute/ Institute of Environmental Management and Assessment, (2013) *Guidelines for Landscape and Visual Impact Assessment (3rd edition)*

⁴¹ Landscape Institute, (2024) *Notes and Clarifications on Aspects of Guidelines for Landscape and Visual Impact Assessment Third edition*

⁴² Natural England, (2014) *An Approach to Landscape Character Assessment*

⁴³ Landscape Institute, (2021) *Assessing landscape value outside national designations Technical Guidance Note 02/21*

⁴⁴ Landscape Institute, (2019) *Visual Representation of Development Proposals Technical Guidance Note 06/19*

- BS 8545:2014 Trees: from nursery to independence in the landscape Recommendations⁴⁵; and
- BS 5837:2012 Trees in Relation to Design, Demolition and Construction⁴⁶.

10.4 Assessment Methodology and Significance Criteria

Scope of the Assessment

10.4.1 GLVIA3 states that this type of assessment provides a tool for identifying and assessing:

'the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity.'

10.4.2 It goes on to emphasise that the assessment has two interlinked elements which are landscape, as a resource; and visual amenity, including representative views. The effects of both must be addressed in the assessment.

Extent of the Study Area

10.4.3 To inform a thorough and robust assessment of the effects of development on landscape and visual receptors, it is necessary to define an appropriate study area. The study area for this assessment was defined with reference to:

- Fieldwork, to assess the effect of topography and intervening visual barriers, particularly vegetation, on visibility; and
- The location of potentially sensitive landscape receptors.

10.4.4 The defined study area includes the landscape and visual receptors within a 1km radius from the Site boundary, as shown in **Figure 10.1 (Appendix 10.1)**. This study area is considered appropriate based on the location of potential receptors. For the purposes of this assessment the Hybrid Application is considered to be the full extent of the Site.

Consultation

10.4.5 No consultation had been undertaken with statutory consultees or other consultees prior to the preparation of this Chapter.

⁴⁵ British Standards Institute, (2014) BSI Standard Publications BS 8545:2014 Trees: from nursery to independence in the landscape Recommendations

⁴⁶ British Standards Institute, (2012) BSI Standard Publications BS 5837, 2012 Trees in Relation to Design, Demolition and Construction

Method of Baseline Data Collation

- 10.4.6 The assessment was undertaken against the baseline situation in 2025.
- 10.4.7 Preliminary desk studies, which included a review of Ordnance Survey (OS) mapping and aerial photography (Google Earth), established the principal characteristics of the Site's surroundings, such as built form, transport routes, vegetation, topography and land use. This informed the identification of potential landscape and visual receptors. In identifying the landscape and visual receptors, account was also taken of relevant published landscape character appraisals, comprising the National Landscape Character Assessment⁴⁷, Suffolk Landscape Character Assessment⁴⁸ and the West Suffolk Landscape Character Assessment⁴⁹.
- 10.4.8 Field studies were undertaken by Bryant Landscape Planning in January and February 2025. Features of the Site and the surrounding area were reviewed along with the potential visual receptors identified in the desk studies.

Identification of Sensitive Receptors

Landscape Receptors

- 10.4.9 Landscape receptors are the components of the landscape that are likely to be affected by proposed development. They can include individual elements (for example trees, water courses or footpaths within the Site); aesthetic and perceptual characteristics (for example sense of naturalness, tranquillity or openness); or, at a larger scale, the character of a defined character area or landscape type.
- 10.4.10 The identification of landscape receptors followed the desk study and field work; the value attached to landscape receptors applied the criteria set out in **Table 10.2**. This was based on and took into account whether the area or feature in question is covered by a landscape designation at a national, regional or local level. Good practice guidance states that undesignated landscapes and townscapes can have value and that this should be judged with reference to the following criteria:
- Landscape, or townscape, quality (condition) and scenic quality;
 - Rarity and representativeness – presence of a rare or important element or feature;
 - Conservation interest – presence of wildlife, earth science or archaeology or historical and cultural interest;

⁴⁷ Natural England (2013) (web based) National Character Area Profile: 87 East Anglian Chalk

⁴⁸ Suffolk County Council <https://suffolklandscape.org.uk/>

⁴⁹ West Suffolk Council (2021) Landscape Character Assessment West Suffolk District

- Recreation value;
- Perceptual aspects – notably wildness and/or tranquillity; and
- Associations - with people or events that contribute to perceptions of natural beauty.

Table 10.2: Landscape Receptor Value Descriptors

Value	Typical criteria	Typical scale of Importance/rarity	Typical examples
Exceptional	A landscape / landscape feature in excellent condition; of high importance, rarity and high scenic quality. No potential for substitution.	International	World Heritage Site
High	A landscape / landscape feature in very good condition; of high importance, rarity and good scenic quality. Limited potential for substitution.	National, Regional, Local	National Park, National Landscape/ Area of Outstanding Natural Beauty (AONB)
Medium	A landscape / landscape feature in generally good condition; with moderate importance and scenic quality. Limited potential for substitution.	Regional, Local	Undesignated but valued perhaps expressed through non-official publications and/or demonstrable use and/or local designation
Low	A degraded landscape / landscape feature in poor condition and / or with no scenic quality and of low importance.	Local	Areas identified as having some redeeming feature or features and possibly identified for improvement
Poor	A landscape / landscape feature in poor condition and / or with no scenic quality and importance. Considerable potential for substitution.	Local	Areas identified for improvement / recovery

Visual Receptors

- 10.4.11 The baseline assessment of visual effects establishes the public areas from which the Site and therefore the development may be visible, the different groups of people who may have views of the development and the nature of these views.
- 10.4.12 Groups of potential visual receptors have been identified and representative views were selected to inform this assessment's findings. The representative views are provided at Appendix 10.3 and are Type 1 Views prepared in line with the LI TGN 06/19 Visual Representation of Development Proposals.
- 10.4.13 The following locations within the study area have informed the identification of visual receptors:
- Public highways;
 - Heritage features;
 - Residential areas; and
 - Any other potentially sensitive locations.
- 10.4.14 GLVIA3 advises that appraisals should consider views experienced by local communities, and how those will change, however the emphasis should be on assessing visual effects on views from public locations such as streets and open spaces, rather than from individual private properties. Notwithstanding this, it is acknowledged that residents of private properties may be sensitive to changes in their visual amenity. As part of this appraisal, the effects on views from external areas associated with private properties such as residential dwellings and hotels have therefore been considered where relevant, although it should be noted that in planning terms there is no private right to a view.
- 10.4.15 Access to private properties has not been sought and the assessment of visual effects for these receptors is based on views from appropriate publicly accessible locations or from within the Site.
- 10.4.16 The identification of potential visual receptors took into account the following:
- Type and relative numbers of people, and their occupation or activity;
 - Nature, composition and characteristics of the view (including direction); and
 - Elements which may interrupt, filter or otherwise influence the view.
- 10.4.17 The degree of visibility of the Site for the potential visual receptors was considered, applying the following criteria which identify the proportion of the Site, and potentially of the development, visible to each receptor:
- No View - The Site is not visible (or difficult to perceive);
 - Glimpse – Views of the Site, or the development, are mostly obscured (e.g. by intervening vegetation or built form) or they comprise a minor or distant part of the context in the wider view;
 - Partial - A clear view of part of the Site, or the development; a partial view of most of it; or a distant view in which it forms a major proportion of a wider view; or

- Open - A panoramic view of most of the Site, or the development, occupying most of the field of vision.

10.4.18 The value attached to the visual receptors' views is based upon the criteria set out in **Table 10.3** and considers:

- Existing recognition of the value of the view (for example through identification in relation to a designated heritage asset, or through planning policy); and
- Indicators of the value attached to views by visitors (through identification in guidebooks or on tourist maps, and reference in literature and art).

Table 10.3: Visual Receptor Value Descriptors

Value	Typical criteria
High	The view has a generally high scenic value. The view may be within, from or towards a planning policy designation; and/or mentioned in guidebooks or on tourist maps; and/or referenced in art and literature; and/or from or towards a designated heritage asset; and/or linked with important and popular visitor attractions where the view forms a recognised part of the visitor experience; and/or has important cultural associations.
Medium	The view has scenic value, with some regional or local importance and scenic quality. It may be associated with a heritage asset; and/or of local visual amenity importance; and/or linked with locally important and popular visitor attractions where the view forms a recognised part of the visitor experience. Limited potential for substitution of some elements within the view.
Low	The view, although it may have value to local people, is not related to a designated, or non-designated, heritage asset or a planning designation; or mentioned in a guidebook or on tourist maps; or referenced in art and literature; and of little visual amenity importance. Considerable potential for substitution of some elements in the view.
Poor	The view is unsightly and of low importance.

Sensitivity of Receptors

10.4.19 Receptor sensitivity was assessed as high, medium or low.

10.4.20 To identify the sensitivity of the landscape and visual receptors, the following factors were considered:

- Value (as set out in **Tables 10.2 and 10.3**); and
- Susceptibility to change (as set out in **Tables 10.4 and 10.5**).

10.4.21 'Susceptibility to change' refers to the ability of a receptor to accommodate the proposed development without undue adverse consequences for the baseline situation and/or the achievement of landscape

planning policies and strategies. Judgement of susceptibility is particular to the specific characteristics of the proposed development and the ability of a particular landscape or feature to accommodate the type of change proposed. Once identified, the level of receptor sensitivity can be moderated, applying professional judgement where appropriate, to form a judgement about its quality in the round.

Table 10.4: Landscape Receptor Susceptibility of Change to the Development Descriptors

Susceptibility	Typical criteria
High	An area possessing particularly distinctive landscape elements, characteristics or sense of place, and few landscape detractors. A landscape with limited tolerance to change of the type proposed. Or where the Development would be in direct conflict with specific landscape management or planning policies.
Medium	An area with some distinctive landscape elements, characteristics, or clearly defined sense of place, but with some landscape detractors. A landscape which is partially tolerant to change of the type proposed.
Low	An area with recognisable landscape character, but few distinctive landscape elements, characteristics, and some, or a number of landscape detractors. The landscape is tolerant of some change of the type proposed OR the area is separated by distance or features and has little or no direct relationship with the Site/and or Development.
Very Low	An area with limited or no distinctive landscape elements, characteristics, or weak sense of place, and many landscape detractors. An area that is tolerant of substantial change of the type proposed OR the area is separated by distance or features and has no direct relationship with the Site/and or Development.

Table 10.5: Visual Receptor Susceptibility of Change to the Development Descriptors

Susceptibility	Typical criteria
High	<p>People engaged in outdoor recreation activity such as using public rights of way whose attention is likely to be focused on the landscape or on particular views.</p> <p>Visitors to heritage assets or visitor attractions where views of the landscape or surroundings are an important part of the experience.</p> <p>Communities where views contribute to the landscape setting of a residential area</p>

Susceptibility	Typical criteria
Medium	<p>People visiting destinations as a leisure activity, or at a place of work, where the views to the landscape or surroundings are part of the experience.</p> <p>Travellers on scenic routes where the attention of drivers and passengers is likely to be focused on the landscape and/or on particular views.</p> <p>Where the receptor, normally categorised as High, is located in an area of poor scenic value where the views to the surrounding area are unlikely to be the main focus of attention (e.g. walking routes to work).</p>
Low	<p>People engaged in outdoor sport or recreation that does not depend on an appreciation of the view.</p> <p>People travelling by road or rail (unless the route is specifically identified for its views).</p> <p>People at work or in a workplace or a place of education where the views to the landscape or surroundings are not important.</p>

10.4.22 The matrix shown in **Table 10.6** broadly demonstrates how sensitivity has been determined through combining the value of each receptor, determined in the baseline assessment, with the receptor's susceptibility to change.

Table 10.6: Sensitivity of Landscape and Visual Receptors Matrix

Value of Receptor	Susceptibility to Change		
	High	Medium	Low / Very Low
High	High	High to/or Medium	Medium
Medium	High to/or Medium	Medium	Medium to/or Low
Low	Medium	Medium to/or Low	Low
Poor	Medium to/or Low	Low	Low

Assessment Modelling

10.4.23 The assessment considers landscape and visual effects resulting from the:

- Detailed Application only, and
- Hybrid Application.

10.4.24 The 'Landscape effects' and 'Visual effects' are defined as follows:

- Landscape effects: These consist of direct and indirect effects or changes in the fabric, character, individual features or elements and condition (quality) of the landscape i.e. landscape receptors within the Site or surrounding area.
- Visual effects: These are the predicted effects on views available to the public i.e. visual receptors, from publicly accessible areas. Specific effects result from changing the consistent elements within an existing view; this may be caused by the introduction of a new feature/element, or the obstruction or modification of an existing view.

10.4.25 The assessment of effects considers the completed development of each application, irrespective of phasing.

Construction

10.4.26 Effects occurring during the construction stage are considered to be temporary and the landscape and visual effects were assessed based on professional judgement, without reference to illustrative material.

Completed Development

10.4.27 The assessment of effects of the completed development upon the identified landscape and visual receptors has been informed by the drawings that comprise the application and are submitted for approval.

Significance Criteria

10.4.28 In order to determine the significance of effect on landscape and visual receptors, the following factors were considered:

- Sensitivity of receptor (as set out in **Table 10.6**); and
- Magnitude of impact (as set out in **Tables 10.7 and 10.8**).

10.4.29 The assessment of magnitude of impact considered the size or scale of the development, the geographical extent of the area influenced and the duration.

- Size and scale relate to the loss or addition of particular elements, the degree to which aesthetic or perceptual aspects of the landscape are altered and the degree of change to key characteristics;
- Geographical extent is the area over which the effect would be felt and can range from site level, to local level or on to a larger scale;
- Duration, for the purpose of this assessment, relates to temporary (during construction) or permanent (once the development is complete); and
- Nature of effect (whether direct or indirect, reversible or irreversible).

10.4.30 The overall magnitude of impact of the development on each identified landscape and visual receptor was assessed as being either high, medium, low, negligible or none; the criteria are set out in **Tables 10.7 and 10.8**.

Table 10.7: Magnitude of Landscape Impact Descriptors

Magnitude	Typical criteria
High	<p>Where the proposals (or works to facilitate them) would result in the total loss of/major alteration to the elements that make up the character of the baseline landscape.</p> <p>Where the effects of the proposals would be experienced over a large scale and/or influence more than one landscape type/character area.</p> <p>Loss of or major alteration to key elements / features / characteristics of the baseline. The duration of this effect may be permanent and non-reversible</p>
Medium	<p>Where the proposals (or works to facilitate them) would result in the partial loss or alteration of one or more of the key elements that make up the character of the baseline landscape.</p> <p>Where the introduction of new features may be prominent but is not necessarily wholly uncharacteristic in the particular setting.</p> <p>Where the effects of the proposals would be largely experienced within the landscape type/character area within which they are located.</p>
Low	<p>Where the proposals (or works to facilitate them) would result in minor loss or alteration of one or more of the key elements that make up the character of the baseline landscape.</p> <p>Where the introduction of elements would not generally be considered uncharacteristic in the particular setting and/or where the proposal is located within other character areas and their introduction by virtue of distance would have limited or no effect on the baseline character area.</p>
Negligible/None	<p>Where the proposals (or works to facilitate them) would result in very minor loss or alteration of one or more of the key elements that make up the character of the baseline and / or the introduction of elements that may not be uncharacteristic in the particular setting and/or</p> <p>Where the proposal occur within other character areas or types and their introduction by virtue of distance would have limited or no effect on the baseline character area.</p>

Table 10.8: Magnitude of Visual Impact Descriptors

Magnitude	Typical criteria
High	<p>Where the proposals (or works to facilitate them) would result in the total loss or major alteration of the view from a particular location.</p> <p>Where the effects of the proposals would be visible from an extensive area.</p> <p>Loss of or major alteration to key elements or features in a view.</p> <p>The duration of this effect may be permanent and non-reversible</p>
Medium	<p>Where the proposals (or works to facilitate them) would result in the partial loss or alteration of one or more of the key elements that make up the view from a particular location.</p> <p>Where the introduction of new features may be prominent but not necessarily wholly uncharacteristic in a view.</p> <p>Where the introduction of new features may be prominent but not necessarily wholly uncharacteristic in a particular view.</p> <p>Where the effects of the proposals would be largely seen from further afield or as part of a view.</p>
Low	<p>Where the proposals (or works to facilitate them) would result in minor loss or alteration of one or more of the key elements that make up the view from a particular location.</p> <p>Where the introduction of elements would not generally be considered uncharacteristic in a view and/or where, by virtue of distance, the proposals would have limited or no effect on the view.</p> <p>Minor loss of or alteration to one or more key elements or features of a view.</p> <p>The duration of this effect may be temporary and reversible</p>
Negligible/None	<p>Where the proposed scheme (or works to facilitate it) would result in very minor loss or alteration of the view and / or the introduction of elements that may not be uncharacteristic in the view.</p> <p>Where the proposals would only be seen from a distance and be imperceptible within the context of the wider view.</p>

Significance of Effects

10.4.31 The predicted significance of effects is a comparison between the baseline situation and that occurring at fixed stages in the future. The effect of development can vary depending on the stage (i.e. construction

through to operational stage) and because the appearance and effect of development can change over time.

- Construction effects include change in land use with effects created by the construction works and the absence of long-term mitigation measures; and
- Operational effects include the effects at the first year of operation; in some instances when the proposed landscape scheme will have reached maturity at Year 15 and will result in a change in effect, this is indicated.

10.4.32 The same methodology for determining the ‘construction effects’ and the ‘operational effects’ was applied.

10.4.33 The matrix shown in **Table 10.9** provides a guide on how magnitude of impact and sensitivity of the landscape and visual receptors have been combined to provide an assessment of the significance of effect. To understand the effect of the development on the identified landscape receptors and visual receptors at the different stages, a supporting narrative is provided to ensure that the conclusions on residual effects are clearly explained.

Table 10.9: Significance of Effects Matrix

Receptor Sensitivity	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Major	Moderate to major	Moderate	Negligible to minor
Medium	Moderate to major	Moderate	Minor to moderate	None
Low	Moderate	Minor to moderate	Minor	None

10.4.34 It is considered that effects with a ‘major’ or ‘moderate’ significance of effect are significant and effects which are ‘minor to moderate’, ‘minor’ or ‘negligible’ are not significant. Effects that were assessed to be less significant are not disregarded and are still considered within this LVIA.

Nature of Effect

10.4.35 The nature of the effect was described as either adverse, neutral or beneficial as follows:

- Beneficial – An advantageous effect to a receptor;
- Neutral – An effect that, on balance, is neither beneficial or adverse to a receptor; or
- Adverse – A detrimental effect to a receptor.

10.4.36 These judgements consider whether the development:

- Conforms with the pattern, scale, mass, grain and historic features of the existing landscape character;

- Results in the loss or restoration of key landscape features;
- Contributes to the existing landscape character; or
- Affects identified landscape receptors and visual receptors.

Cumulative Assessment

10.4.37 Cumulative landscape or visual effects are defined as the combined effects which may result from adding the effects of the developments to the effects of identified cumulative schemes and consideration was given to the potential for such inter-project effects.

10.4.38 GLVIA3 defines cumulative landscape and visual effects as those that:

‘result from additional changes to the landscape or visual amenity caused by the Scheme in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.’

10.4.39 Three cumulative developments in the surrounding area which have been consented or are pending a decision have been identified as potentially relevant to the assessment of inter-project effects.

Limitations and Assumptions

10.4.40 The following assumptions have been made during the assessment:

- The baseline photography was captured in January 2025 when the deciduous trees were bare. In line with best practice, the assessment of potential effects relates to winter months when visibility is greatest;
- Existing vegetation will continue to grow at rates appropriate to the location, species and maturity of the vegetation, with an average growth rate of 0.3m/year;
- Visual effects can be expected to vary e.g. poor visibility at times of low cloud, rainfall and dusk when a reduction in visual clarity, colour and contrast would be experienced. Reduced visibility would limit the extent of view possible, particularly for mid to long distance views. Consequently, the assessment of effects is based on the worst-case scenario, where the development would be most visible;
- Establishment and growth rates of landscape mitigation proposals were based on established forestry (Forestry Commission / Enterprise) methods, and it was assumed that new planting of trees and shrubs will achieve a height of 7 to 10m after 10 – 15 years allowing for the local growing conditions / environment; and
- The design of the development will allow sufficient space to accord with:
 - BS 5837:2012 and protect the future viability of retained trees; and

- BS 8545:2014 Trees: from nursery to independence in the landscape Recommendations to accommodate the future mature height and canopy growth of tree planting.

10.4.41 The following limitations apply to the assessment:

- Whilst the relationship between the Site and any heritage or ecological assets within the study area has been a factor in determining the value of the landscape and visual receptors, this Chapter does not assess the harm to the significance of any heritage assets or to the value of any ecological assets.

10.5 Baseline Conditions

10.5.1 This sets out the existing landscape and visual context of the Site and surrounding study area in terms of:

- The landscape features of the Site;
- The landscape character of the surrounding area; and
- The nature and extent of the Site's visibility

10.5.2 Landscape and visual receptors are identified and their sensitivity to the change proposed is assessed.

The Site

10.5.3 The Site comprises two distinct areas of land, hereafter referred to as the Eastern Parcel and the Western Parcel (see Chapter 1 for key terms of reference), which have a total area of 48.5 ha. The Site adjoins the Kentford settlement boundary to the east and is located approximately 5km east of Newmarket. The location is shown at **Figure 10.1 (Appendix 10.1)**.

10.5.4 There is no public access to the Site.

10.5.5 Tree Surveys (TS) of the trees within and immediately adjacent to the Site were carried out by Hayden's Arboricultural Consultants Limited in accordance with BS 5837:2012 in May 2024 and January 2025. The TS demonstrated that most of the trees surveyed are of high or moderate quality, with a relatively low number being classified as of low quality.

The Eastern Parcel

10.5.6 The Eastern Parcel is occupied by the former Animal Health Trust (AHT), a research and development, and clinical facility for the treatment of domestic animals, mainly dogs, cats and horses. The AHT went into administration in 2020 and has lain vacant since.

10.5.7 The Eastern Parcel can be sub-divided into four sub-parcels - referred to in this Chapter as Parcels E1-E4 – which are shown on **Figure 10.2 (Appendix 10.1)**.

Parcel E1

- 10.5.8 Parcel E1 is located in the east of the Eastern Parcel. It is grassed and sub-divided into small paddocks by post and rail fencing (**Photo E1; Appendix 10.2**). It contains the Vaccine Centre (known as Allen Centre for Vaccine Studies), previously used by the AHT - a two-storey building with associated areas of parking (**Photo E2; Appendix 10.2**).
- 10.5.9 Parcel E1 is bordered to the east by dwellings on Jeddah Way (**Photo E3; Appendix 10.2**) and to the north by a strip of open space with Farrier Way and associated dwellings beyond (**Photo E4; Appendix 10.2**). The western and southern boundaries are defined by mature tree belts (**Photos E1 and E5; Appendix 10.2**), which are categorised in the TS as Category B. One tree (T026) on the eastern boundary – an 18m high pine - is categorised as Category A.

Parcel E2

- 10.5.10 Parcel E2 is located in the northern part of the Eastern Parcel, bounded by Sir Graham Kirkham Avenue to the west, the B1506 to the north, Sire Lane to the east and Parcel E3 to the south.
- 10.5.11 There are two buildings within Parcel E2, one of which - the Stable Block associated with Lanwades Hall (known as The John MacDougall Visitor Centre) - is Grade II listed (**Photos E6 & E7; Appendix 10.2**).
- 10.5.12 Parcel E2 is predominantly grass. The mature tree belts on its boundaries and trees within the parcel are categorised in the TS as Category B (**Photo E9; Appendix 10.2**). The mature beeches on the southern boundary of the parcel (G055) are categorised as Category A (**Photo E8; Appendix 10.2**).

Parcel E3

- 10.5.13 Parcel E3 – to the west of Parcel E1 and south of Parcel E2 – contains over 15 buildings, all associated with the AHT (**Photos E10-E13; Appendix 10.2**).
- 10.5.14 The southern extent of the parcel is grassed (**Photo E14; Appendix 10.2**), divided into two paddocks by a native hedgerow. Tree belts separate the parcel from Parcel E1 to the east and Parcel E4 to the south. The tree belts on the southern and western boundaries of the parcel (W009, A011, A011 and A012) are categorised as Category A.

Parcel E4

- 10.5.15 Parcel E4 - located south and west of Parcel E3 – has the same character as Parcel E1, comprising grassed paddocks and built form (**Photos E15; Appendix 10.2**).
- 10.5.16 Parcel E4 is also contained by tree belts, the majority of which are categorised as Category A (G020, G019 and W006 (**Photo E16; Appendix 10.2**). The boundary with Lanwades Hall – to the north of the Parcel – is defined by a 2m high timber fence (**Photo E17; Appendix 10.2**).

The Western Parcel

10.5.17 The Western Parcel comprises two large fields, hereafter referred to as Parcel W1 and Parcel W2.

Parcel W1

10.5.18 Parcel W1 is a large, grassed field, sub-divided by post and rail fencing into paddocks. The parcel is contained by mature tree cover on all boundaries (**Photos W1 and W2; Appendix 10.2**). It is bounded by the B1506 to the north, by the grounds of Lanwades Hall and Parcel E4, beyond an avenue of beech trees (G019 and G020) to the east, by open countryside to the south and by Parcel W2 to the west.

10.5.19 In addition to the trees on its boundaries, which includes an area recently planted with standard native trees adjacent to the boundary with Lanwades Hall, there are several small groups of trees within the parcel, all of high quality, which give the northern extent of the parcel a parkland character.

10.5.20 The boundary with Lanwades Hall is defined by post and rail fencing and a 2m high timber palisade fence (**Photo W3; Appendix 10.2**). Parcel W1 slopes gently from approximately 56m Above Ordnance Datum (AOD) at the southern boundary to approximately 40m AOD at the northern boundary, with B1506.

Parcel W2

10.5.21 Parcel W2 lies to the west of Parcel W1 and is the largest parcel of land within the Site. Like Parcel W1, Parcel W2 is grassed and sub-divided into paddocks (**Photo W5-W7; Appendix 10.2**) and contained by mature trees to the north, east and south. The western boundary with School Road is defined by a mature, well-managed native hedgerow (**Photo W4; Appendix 10.2**).

10.5.22 The parcel is bounded by a residential property (Chippenham Hill) to the south, School Road to the west and the B1506 to the north.

10.5.23 The topography of Parcel W2 mirrors that of Parcel W1, sloping down from the southern boundary with Chippenham Hill to the northern boundary with B1506.

Landscape Character of the Surrounding Area

10.5.24 The following section appraises the landscape character of the study area. The appraisal considers relevant published landscape character assessments and has been informed by findings of the field surveys.

Landscape Character – Published Assessments

National Landscape Character Assessment

10.5.25 At a national level the Site falls within National Character Area (NCA) Area 87: East Anglian Chalk.

10.5.26 NCA 87: East Anglian Chalk is described as ‘characterised by the narrow continuation of the chalk ridge that runs south-west–north-east across southern England...The vast majority of its landscape is open countryside, under cereal production...It is an open landscape but trees on hill tops are visually distinct and

characteristic...A significant influence around Newmarket has historically been horse-racing and stud farms, which have brought a manicured appearance to the landscape '

- 10.5.27 The national assessment covers a wide area and whilst it provides useful background and context, the scale is such that it is considered that there would be no effects resulting from the development, accordingly no further reference to it is made within this assessment.

Regional Landscape Character Assessment

- 10.5.28 The Suffolk Landscape Character Assessment (SLCA) assessed the landscape of the county and identified thirty distinct Landscape Character Types (LCTs). The majority of the study area is assessed as LCT 13 Rolling Estate Chalklands (**Figure 10.4; Appendix 10.1**). Key characteristics of LCT 13 identified in the SLCA comprise:

- Very gently rolling or flat landscape of chalky free draining loam;
- Dominated by large scale arable production;
- 'Studscape' of small paddocks and shelterbelts;
- Large uniform fields enclosed by low hawthorn hedges;
- Shelter belt planting, often ornamental species;
- A "well kept" and tidy landscape;
- Open views;
- Clustered villages with flint and thatch vernacular houses; and
- Many new large "prestige" homes in villages

- 10.5.29 The SCLA describes the visual experience as of 'a landscape of open space with long views, emphasised by straight roads and regimented pattern of belts and hedges ... where the 'studscape' is most apparent, belts of trees and woodland planting confine the views.'

- 10.5.30 In terms of condition, LCT 13 is described as 'a largely tidy and well-kept landscape that has been maintained by the income from farming and the horse racing industry' although, the SCLA notes that the expansion and suburbanisation of villages is eroding the local character.

- 10.5.31 The guidance for LCT 13 (**Appendix 10.4**) in the SCLA summarises the landscape sensitivity of the LCT:

'This is a gently rolling landscape of free draining soils in which the villages are confined to river valleys and tend to be in the form of quite tight clusters. The wider landscape is settled with a scattering of estate farmhouses and associated buildings.

'The enclosure pattern of large rectilinear fields is augmented in some places by networks of tree belts associated with horse racing studs. This activity, along with large-scale cereal and vegetable production shape much of the character of this landscape.

‘Unless there is a “studscape” of tree belts and small enclosures, much of this landscape has long open views. Therefore large buildings in the open countryside can be prominent. However, such changes can be accommodated with suitable planting that is consistent with the character of the landscape.’

10.5.32 In terms of the development management of settlement expansion, the SCLA states:

‘In respect of visual impact the regular nature of this landscape means that it does have more potential capacity to accept significant settlement expansion than the ancient countryside of the claylands. The Rolling Estate Chalklands with its simpler and more modern land cover pattern and regular pattern of tree cover can be adapted to accept larger growth...

‘this landscape does have a history of settlement... Therefore there is some capacity, in terms of landscape character for the tightly clustered settlements to expand. However, it is important to integrate the settlement edge into the surrounding rural and sparsely settled countryside to minimise the impact on the character of the wider countryside.’

10.5.33 The description of LCT 13 in the SCLA is relevant to the wider study area and to the Western Parcel. However, the Eastern Parcel has a more developed character, and the field studies established that it does not display the key characteristics of LCT 13 described in the SCLA.

District Landscape Character Assessment

West Suffolk

10.5.34 The southern extent of the study area is assessed in the West Suffolk Landscape Character Assessment (WSLCA), which subdivides the district into Landscape Character Areas (LCA).

10.5.35 The WSLCA locates the Site at the northeastern extent of LCA A5: Kennett Valley (**Figure 10.5; Appendix 10.1**), a long narrow landscape character area which reflects the alignment of the Kennett river and is described as ‘a medium scale arable farmland on valley slopes with tree blocks and small-scale pattern of meadow, carr woodland, tree clumps and hedgerows on the floodplain’.

10.5.36 The WSLCA identifies a number of key natural, cultural and perceptual features which contribute to the landscape sensitivity of LCA A5 (page 7 of **Appendix 10.5**), however it is not considered that the Site itself displays any of these characteristics.

10.5.37 The WSLCA provides strategic guidance for managing landscape change in relation to built development:

'The riverside and valley setting of villages is sensitive to linear development along the roads altering settlement form and disrupting the relationship between the built form and river. Only small-scale built development and infrastructure is appropriate within the intimate landscape of the valley villages. Any new development should reflect local vernacular and suburban style garden boundaries, kerbs and lighting should be resisted. Care should be taken to avoid development which extends up the valley slopes or urbanises the rural lanes. Expansion of villages along the valley should be resisted in order to retain the individual identity of the settlements. Where existing development forms an abrupt edge with the wider landscape opportunities should be sought to soften these edges through appropriate hedgerow and tree planting.'

10.5.38 Areas of the study area to the east of LCA A5 are classified in the WSLCA as LCA G1: Newmarket & Fordham Chalklands, described as a wider chalk landscape which flanks the fenlands through East Cambridgeshire and forms a setting to the settlement of Newmarket.

10.5.39 Key relevant characteristics of LCA G1 include:

- Gently rolling or flat chalk landscape surrounding the racehorse town of Newmarket;
- Free draining chalky soils supporting areas of crop production in large scale rectilinear fields with sparse hedgerows;
- Areas of studscape landscape of small paddocks defined by post and rail fencing and straight shelterbelts;
- Stud farms have a distinct vernacular often with large gatehouses, courtyard stabling and mansion houses predominantly built of red brick and slate;
- Road network is often straight, converging on Newmarket; and
- Hedges cut in a distinctive shape giving rise to perceptions of a well-kept and tidy landscape.

10.5.40 Although the WSLCA locates the Site in LCA A5, it is considered that it does not share the LCA's key characteristics.

10.5.41 The Western Parcel displays more of the key characteristics of LCA G1 Newmarket & Fordham Chalklands, notably the gently undulating topography, the rectilinear geometry and the straight shelterbelts, whilst the Eastern Parcel has a more peri-urban, settlement edge character.

West Suffolk Review of local landscape designations

- 10.5.42 As part of the evidence base for the emerging West Suffolk Local Plan, a review of existing local landscape designations was carried out. The review⁵⁰ identifies eight Local Valued Landscapes (LVL) in the district, proposed for designation and protection in draft Policy SP5 Locally Valued Landscape.
- 10.5.43 LVL 5 Kennett Valley (**Appendix 10.6**) broadly aligns with the southern extent of WSLCA LCA A5, extending slightly further west to include areas to the west of the Site (**Figure 10.5; Appendix 10.1**).
- 10.5.44 The proposed boundary of LVL 5 Kennett Valley aligns with the western boundary of the Site, however the Site itself is not included in the LVL.

East Cambridgeshire

- 10.5.45 East Cambridgeshire have not published a landscape character assessment of their district.

Land Use and Settlement

- 10.5.46 As noted in the published landscape character assessments, the land use in the area is predominantly either arable farmland or associated with the equine industry, comprising numerous paddocks, which are generally geometric in shape, or larger more open areas for exercising horses (gallops).
- 10.5.47 Kentford, the settlement to the immediate east of the Site, is a moderate sized village, comprising predominantly 20th century housing. Residential areas abutting the Site to the east are generally low rise and of low to medium density.

Topography

- 10.5.48 Land to the north of the Site is gently undulating in the range 25-35m AOD. The valley of the Kennett River passes to the east and south of the Site. The land rises to the southeast and southwest of the Site to approximately 80m AOD.

Movement and Public Rights of Way (Figure 10.3; Appendix 10.1)

- 10.5.49 The B1506, which passes to the north of the Site is relatively busy. School Road to the west was observed to have a lower volume of traffic. It has hedgerows along most of its length and the character of a country lane.
- 10.5.50 The A14 and a railway line bisect the northern extent of the study area. Kentford station is approximately 750m north of the Site.

⁵⁰ West Sussex Council (2022) *Review of local landscape designations West Suffolk District*

- 10.5.51 There are few public footpaths or bridleways within the wider area and, excepting a short stretch of footpath north of Moulton, none within the study area.

Landscape and Heritage Designations

- 10.5.52 No landscape designations which would denote value have been identified in relation to the study area.
- 10.5.53 Moulton Conservation Area lies approximately 1.3km to the south of the Site, beyond the study area.
- 10.5.54 In addition to the stable block, which is within the Site boundary, there are an additional six designated heritage assets in the study area, the closest of which to the Site are Lanwades Hall and a pair of lodge cottages and linking gateway associated with the hall (Grade II) (**Figure 10.3 Appendix 10.1**) which are located to the east of Parcel W1.

Landscape Receptors

- 10.5.55 The landscape features which could experience direct effects as a result of the development are the trees which fall within or adjacent to the Site boundary.
- 10.5.56 To assess potential effects on the character of the wider landscape within the study area, distinct areas within the study area which share landscape features and characteristics are identified as Local Landscape Character Areas (LLCA).
- 10.5.57 Applying the findings of the field studies and the review of published character assessments, two Local Landscape Character Areas (LLCA) within the study area have been identified as landscape character receptors – LLCA 1: Newmarket Chalklands, which includes the Western Parcel, and LLCA 2: Kennett Valley, which broadly equates to LCA A5 Kennett Valley in the WSLCA (**Figure 10.6 Appendix 10.1**).

LLCA 1: Newmarket Chalklands

- 10.5.58 LLCA 1 is characterised by open, generally large scale, geometric arable farmland, paddocks and larger more open areas for exercising horses (gallops). The field boundaries are strongly geometrical and generally devoid of hedges or trees, whilst the paddocks are often enclosed by tall hedges or tree belts, all maintained to a high standard. Hedge and tree planting along the roads also provides some linear enclosure. There is a lack of public footpaths or access.

LLCA 2: Kennett Valley

- 10.5.59 The River Kennett flows through the area in a shallow valley. Contrasting with the open geometric landscape of the landscape to the west, the area features medium scale arable fields defined by well-trimmed hedges and blocks of woodland on the valley slopes. There is some recreational activity associated with the river.
- 10.5.60 In summary, the following landscape receptors which could experience either direct or indirect effects from the development have been identified:

- Trees within the Site and on the Site boundaries;
- LLCA 1: Newmarket Chalklands; and
- LLCA 2: Kennett Valley

Value and Sensitivity of Landscape Receptors

- 10.5.61 Applying the criteria provided in Table 10.2, the value of the trees is assessed as high i.e. they are landscape features in very good condition with high importance and good scenic quality. The trees are considered to have a high susceptibility to the type of development proposed and their sensitivity is therefore judged to be high.
- 10.5.62 In order to assess the landscape value of the LLCAs, it is appropriate to consider the landscape value of the Western Parcel, which forms part of LLCA 1: Newmarket Chalklands.
- 10.5.63 The Western Parcel is not subject to any designations which would denote value and under the meaning intended of para 180a) of the NPPF, it is not a 'valued landscape'. However, it is acknowledged that undesignated landscapes can have value. The LI TGN 'Assessing Landscape Value Outside National Designations' provides criteria for assessing landscape value and these have been applied to the Western Parcel – summarised in Table 10.10.
- 10.5.64 For context, the landscape value of the Eastern Parcel is also summarised in Table 10.10.
- 10.5.65 Applying the LI TGN criteria, the overall landscape value of both the Eastern Parcel and of the Western Parcel is assessed as low.

Table 10.10: Assessment of landscape value of the Site (LI TGN)

Factor	Definition	Commentary	
		Eastern Parcel	Western Parcel
Natural Heritage	Landscape with clear evidence of ecological, geological, geomorphological or physiographic interest which contribute positively to the landscape	<i>Medium</i> The Eastern Parcel contains a number of high-quality trees	<i>Medium</i> The Western Parcel contains a number of high-quality trees
Cultural heritage	Landscape with clear evidence of archaeological, historical or cultural interest which	<i>Low</i> The Eastern Parcel displays little evidence of features which evidence the time depth of the area	<i>Low</i> The Western Parcel displays little evidence of features which evidence the time depth of the area

Factor	Definition	Commentary	
		Eastern Parcel	Western Parcel
	contribute positively to the landscape		
Landscape Condition	Landscape which is in a good physical state both with regard to individual elements and overall landscape structure	<i>Low</i> Although well maintained, the Eastern Parcel contains a significant amount of built form (31 buildings)	<i>Medium</i> The Western Parcel is well maintained
Associations	Landscape which relates to notable people, events and the arts	<i>None</i> No associations have been identified	<i>None</i> No associations have been identified
Distinctiveness	Landscape that has a strong sense of identity	<i>Low</i> The Eastern Parcel does not have a strong sense of individual identity	<i>Low</i> The Western Parcel does not have a strong sense of individual identity
Recreational	Landscape offering recreational opportunities where experience of landscape is important	<i>None</i> There is no public access to the Eastern Parcel	<i>None</i> There is no public access to the Western Parcel
Perceptual (scenic)	Landscape that appeals to the senses, primarily the visual sense	<i>Low</i> The Eastern Parcel has low scenic value	<i>Low</i> The Western Parcel has low scenic value
Perceptual (Wildness and Tranquillity)	Landscape with a strong perceptual value notably wildness, tranquillity and/or dark skies	<i>Low</i> The Eastern Parcel displays few characteristics of wildness or remoteness	<i>Low</i> The Western Parcel displays few characteristics of wildness or remoteness
Functional	Landscape which performs a clearly identifiable and valuable function, particularly in the healthy functioning of the landscape	<i>None</i> The Eastern Parcel does not form part of the wider functioning agricultural landscape	<i>Low</i> The Western Parcel does not play a major role as part of the wider functioning agricultural landscape

- 10.5.66 The value of LLCA 1: Newmarket Chalklands – of which the Western Parcel is a part - is assessed as medium, since it is an area in generally good condition, with some scenic quality and distinctiveness and landscape elements which provide a sense of character and place. There are generally few detractors or uncharacteristic features present.
- 10.5.67 The value of LLCA 2: Kennett Valley is also assessed as medium.
- 10.5.68 The susceptibility to the type of change proposed for both LLCAs is assessed as medium i.e. they are landscapes which are partially tolerant to change of the type proposed; their sensitivity is therefore judged to be medium.

Visual Baseline Appraisal

- 10.5.69 Establishing the extent of the areas from which the Site is visible has been done through a combination of desk-based work and by field surveys visiting publicly accessible areas which were identified as having potential views of the development.
- 10.5.70 The field surveys reviewed the topography and the locations of potential intervening visual barriers such as built form and significant vegetation within the study area, acknowledging that there can be a contrast in visibility between summer and winter months, with trees screening some views towards the Site, particularly during the summer.
- 10.5.71 A total of 16 representative views were identified during the field surveys to demonstrate existing views towards the Site; the locations are shown on **Figure 10.8**. The viewpoints identify features within the view, define the location and extent of the Site within the view and provide a visual record.
- 10.5.72 The rationale for the selection of the viewpoints is set out in **Table 10.11**.

Table 10.11: Rationale for the selection of representative viewpoints

Location	Rationale for selection	Visual Receptors
1a: B1506	View approaching the Site from the west	Users of B1506 (drivers - no footpath)
1b: B1506	View from junction of B1506, School Road and Norwich Road	Users of B1506 (drivers – no footpath)
1c: B1506	View looking towards Parcel W2	Users of B1506 (drivers and pedestrians)

Location	Rationale for selection	Visual Receptors
1d: B1506	View looking east towards Parcel E2	Users of B1506 (drivers and pedestrians)
1e: Entrance to AHT	View of entrance to AHT	Users of B1506 (drivers and pedestrians)
1f: B1506	View looking west towards stable block (Parcel E2)	Users of B1506 (drivers and pedestrians)
1g: B1506	View passing Parcel W1 looking west	Users of B1506 (drivers and pedestrians)
2a: School Road	View looking north towards Parcel W2	Users of School Road
2b: School Road	View looking northeast across Parcel W2	Drivers on School Road
2c: School Road	View looking south towards Parcel W2	Drivers on School Road
3: Norfolk Road	View looking south towards junction with B1506 and School Road	Drivers on Norfolk Road
4: Byerley Close	View looking west towards Parcel E2	Residents
5: Larnach Drive	View looking south towards Parcel E1	Residents
6: Farrier Mews	View looking south towards Parcel E1	Residents
7a: Jeddah Way	View looking west towards Parcel E2	Residents
7b: Jeddah Way	View looking southwest towards Parcel E1	Residents
7c: Anvil Way	View looking west towards Parcel E1	Residents

10.5.73 Visual receptors, shown on **Figure 10.7**, are defined groups of people who have the potential to be affected by the development. They comprise:

- Users of roads (RD);
- Residents (RE); and
- Visitors to hospitality venues (VIS)

- 10.5.74 The potential effects on the visual amenity of residents of areas which adjoin the Site boundary and, due to its proximity, on visitors to Lanwades Hall have been considered.
- 10.5.75 Visibility of the Site – and therefore of the completed development - for the visual receptor groups varies depending on their proximity to it and the height and mass of intervening visual barriers. Some of the views, for example for users of roads, are kinetic and visibility varies as these receptors move around.

General Visibility of the Site

- 10.5.76 Notwithstanding the relative scale of the Site, it has a limited visual envelope. This is due to the limited number of publicly accessible locations in the study area, the relatively level topography and the extensive mature tree cover within the Site and on the boundaries - which creates a visual barrier even during winter months when the deciduous trees are bare.

Value and Sensitivity of the Visual Receptors

- 10.5.77 The following section describes the visual receptors' existing views of the Site, distinguishing between views of the Eastern Parcel and views of the Western Parcel. The value of the views and each group of visual receptors' susceptibility and sensitivity are assessed, applying the criteria provided in **Tables 10.3, 10.5 and 10.6**.

RD01 - Users of B1506

- 10.5.78 Although the B1506 follows the Site's northern boundary, views of the Site are generally screened along its length by the hedgerows and mature tree cover on the boundary of Parcels E2, W1 and W2 (representative views 1a – 1g). There are occasional glimpsed views across the Site from the road as it passes the Site.
- 10.5.79 The value of the views from the B1506 is assessed as low.
- 10.5.80 These visual receptors are considered to have a low susceptibility to the type of change proposed since they are travelling by road and their attention is unlikely to be focused on the landscape. The value was assessed as low and the sensitivity is judged to be low.

RD02 - Users of School Road

- 10.5.81 School Road follows the boundary of the Western Parcel. There are occasional glimpses across Parcel W2 above the field hedgerow which lines the road, or through gaps in it (representative views 2a – 2c).
- 10.5.82 The value of the views is assessed as low.
- 10.5.83 These visual receptors are considered to have a low susceptibility to the type of change proposed. The value was assessed as low and the sensitivity is judged to be low.

RD03 - Users of Norfolk Road

- 10.5.84 School Road runs north from the junction of the B1506 and School Road. Travelling south towards the Site, views are generally obscured by the quantum of intervening tree cover, with glimpsed views possible on the final approach to the junction (representative view 3).
- 10.5.85 The value of the views is assessed as low.
- 10.5.86 These visual receptors are considered to have a low susceptibility to the type of change proposed. The value was assessed as low and the sensitivity is judged to be low.

RE01 – Residents of Byerley Close and Larnach Drive

- 10.5.87 Byerley Close and Larnach Drive are located to the east of Parcel E2 and north of Parcel E1. From communal areas, looking west towards the Site, there are glimpsed views across Parcel E2 towards the stable block (representative views 4 and 5). It is assumed that glimpsed views of the Site are possible from windows and gardens orientated towards it.
- 10.5.88 The value of the views is assessed as low.
- 10.5.89 These visual receptors are considered to have a high susceptibility to the type of change proposed. The value was assessed as low and the sensitivity is judged to be medium.

RE02 – Residents of Farrier Mews

- 10.5.90 Farrier Mews is located to the north of Parcel E1 and from communal areas, looking south, there are views above the boundary fence of the building in Parcel E1 and of the trees on its boundaries (representative view 6). It is assumed that glimpsed views of the Site are possible from windows and gardens orientated towards it.
- 10.5.91 The value of the views is assessed as low.
- 10.5.92 These visual receptors are considered to have a high susceptibility to the type of change proposed. The value was assessed as low and the sensitivity is judged to be medium.

RE03 – Residents of Jeddah Way

- 10.5.93 In views from communal areas associated with Jeddah Way, to the east of Parcel E1, the trees on the parcels' boundaries can be seen above the rooves of intervening built form (representative views 7a - 7c). It is assumed that glimpsed views of the Site are possible from some windows and gardens orientated towards it.
- 10.5.94 The value of the views is assessed as low.
- 10.5.95 These visual receptors are considered to have a high susceptibility to the type of change proposed. The value was assessed as low and the sensitivity is judged to be medium.

VIS01 – Visitors to Lanwades Hall

- 10.5.96 There are assumed to be glimpsed views of Parcel W1 from the access driveway and from the western extent of the grounds, albeit substantially screened by the mature specimen trees and associated dense understorey along the driveway and approach and the recently installed 2m high closed board timber fencing on the boundary with Parcel W1.
- 10.5.97 Although there are assumed to be limited glimpsed views south and southeast from some upper windows of the hall towards Parcels E3 and E4, views from the entrance courtyard are assumed to be screened by the extensive evergreen shrubbery on the boundary and the existing 2.4m high timber palisade fencing. Building 13 would be visible in any views. It is assumed that the Site is not visible from external areas to the east of the hall, such as the walled garden.
- 10.5.98 The value of views towards the Site from the hall is assessed as medium.
- 10.5.99 Visitors to Lanwades Hall are considered to have a medium susceptibility to the type of change proposed since they are there for leisure and hospitality and incidental views towards the surrounding area, although unlikely to be the main focus of attention, may contribute to the experience. The value was assessed as medium and their sensitivity is therefore judged to be medium.

Table 10.12: Visual Receptors

Visual Receptor	Visibility of the Site	Value of views of the Site	Susceptibility	Sensitivity
RD01 - Users of B1506	Glimpses of Parcels E2, W1 and W2	Low	Low	Low
RD02 - Users of School Road	Glimpses of Parcel W2	Low	Low	Low
RD03 - Users of Norfolk Road	Glimpses of Parcel W2	Low	Low	Low
RE01 – Residents of Byerley Close and Larnach Drive	Partial views of Parcel E2	Low	High	Medium
RE02 – Residents of Farriers Way	Glimpses of Parcel E1	Low	High	Medium
RE03 – Residents of Jeddah Way	Glimpses of Parcel E1	Low	High	Medium
VIS01 – Visitors to Lanwades Hall	Glimpsed views of Parcels E3, E4 and W1	Medium	Medium	Medium

10.6 Assessment of Effects, Mitigation and Residual Effects

Site Enabling and Construction

10.6.1 The site enabling and construction phase has the potential to result in changes to landscape character, landscape features and views. The principal activities that could affect the fabric, quality and character of the landscape and views during construction are:

- Installation of hoarding around the Site;
- Limited clearance of vegetation;
- Demolition of built form within Parcels E1-E4;
- Machinery moving material within the Site;
- Earthworks to reprofile areas of the Site;
- Introduction of temporary elements such as material stockpiles, site compounds, temporary parking areas, protective fencing and security fencing; and
- Movement of plant and vehicles generating a shifting pattern of movement across different parts of the Site and on local roads.

Embedded Mitigation

10.6.2 During the construction phase, contractors will be required to apply good practice site measures in compliance with a Construction Environmental Management Plan (CEMP). The CEMP will include standard construction methods and require that housekeeping be maintained to keep a tidy site and minimise visual clutter during construction works and that tree protection measures will be implemented in line with BS 5837, 2012 Trees in Relation to Design, Demolition and Construction. The CEMP will be secured via a standard planning condition.

Anticipated Landscape Effects

10.6.3 The construction phase has the potential to result in changes to and effects on landscape character and features.

Detailed Application (Eastern Parcel)

- 10.6.4 Table 10.13 summarises the predicted magnitude and significance of landscape effects relating to the demolition and construction phase of the development sought under the Detailed Application.

Table 10.13: Landscape effects and evaluation of significance – Construction Phase

Landscape Receptor	Sensitivity	Description of Change	Magnitude of Impact	Nature of Change	Significance of Effect
Trees within the Site	High	Removal of limited number of trees Installation of protective fencing	Negligible	Adverse	Minor
LLCA 1: Newmarket Chalklands	Medium	Limited awareness of increase in movement and noise levels; views of site hoarding	Negligible	N/A	None
LLCA 2: Kennett Valley	Medium	Limited awareness of increase in movement and noise levels; views of site hoarding	Negligible	N/A	None

Hybrid Application (Eastern and Western Parcel)

- 10.6.5 Table 10.14 summarises the predicted magnitude and significance of landscape effects relating to the demolition and construction phase of the proposed development.

Table 10.14: Landscape effects and evaluation of significance – Construction Phase

Landscape Receptor	Sensitivity	Description of Change	Magnitude of Impact	Nature of Change	Significance of Effect
Trees within the Site	High	Removal of limited number of trees Installation of protective fencing	Negligible	Adverse	Minor
LLCA 1: Newmarket Chalklands	Medium	Introduction of temporary elements, creating a new landscape pattern and change to the character of the Site (parcels W1 and W2)	Low	Adverse	Minor
LLCA 2: Kennett Valley	Medium	Limited awareness of increase in movement and noise levels; views of site hoarding	Negligible	N/A	None

Anticipated Visual Effects

- 10.6.6 The construction phase has the potential to result in changes to views experienced by identified visual receptors.

Detailed Application (Eastern Parcel)

- 10.6.7 **Table 10.15** summarises the predicted magnitude and significance of visual effects relating to the construction phase of the development sought under the Detailed Application.

Table 10.15: Visual effects and evaluation of significance – Construction Phase

Visual Receptor	Sensitivity	Description of Change	Magnitude of Impact	Nature of Change	Significance of Effect
RD01 - Users of B1506	Low	Glimpses of construction activity and site hoarding associated with Parcel E2	Low	Adverse	Minor
RD02 - Users of School Road	Low	None	None	N/A	None
RD03 - Users of Norfolk Road	Low	None	None	N/A	None
RE01 – Residents of Byerley Close and Larnach Drive	Medium	Views of demolition and construction activity and site hoarding associated with Parcel E2	Low	Adverse	Minor
RE02 – Residents of Farriers Way	Medium	Views of demolition and construction activity associated with Parcel E1 beyond boundary fencing	Low	Adverse	Minor
RE03 – Residents of Jeddah Way	Medium	Glimpses of demolition and construction activity and site hoarding associated with Parcel E1	Low	Adverse	Minor
VIS01 – Visitors to Lanwades Hall	Medium	Potential glimpses of demolition and construction activity in Parcels E3 and E4 above site hoarding	Negligible	N/A	None

Hybrid Application (Eastern and Western Parcels)

10.6.8 **Table 10.16** summarises the predicted magnitude and significance of visual effects relating to the construction phase of the development sought under the application for the proposed development.

Table 10.16: Visual effects and evaluation of significance – Construction Phase

Visual Receptor	Sensitivity	Description of Change	Magnitude of Impact	Nature of Change	Significance of Effect
RD01 - Users of B1506	Low	Glimpses of construction activity and site hoarding associated with Parcels E2, W1 and W2	Medium	Adverse	Moderate
RD02 - Users of School Road	Low	Glimpses of construction activity and site hoarding associated with Parcel W2	Low	Adverse	Minor
RD03 - Users of Norfolk Road	Low	Glimpses of construction activity and site hoarding associated with Parcel W2	Negligible	N/A	None
RE01 – Residents of Byerley Close and Larnach Drive	Medium	Views of demolition and construction activity and site hoarding associated with Parcel E2	Low	Adverse	Minor
RE02 – Residents of Farriers Way	Medium	Views of demolition and construction activity associated with Parcel E1 beyond boundary fencing	Low	Adverse	Minor
RE03 – Residents of Jeddah Way	Medium	Glimpses of demolition and construction activity and site hoarding associated with Parcel E1	Low	Adverse	Minor
VIS01 – Visitors to Lanwades Hall	Medium	Glimpses of demolition and construction activity and site hoarding associated with	Low	Adverse	Minor

Visual Receptor	Sensitivity	Description of Change	Magnitude of Impact	Nature of Change	Significance of Effect
		Parcels E3, E4 and W1			

Operation

Embedded Mitigation

10.6.9 Primary mitigation measures that are relevant to landscape and visual matters and have been incorporated into the development are set out in ES Chapter 4: The Development Description Chapter 5 Phasing and Construction. The assessment of effects assumes the development is implemented in line with the submitted plans and the scheme description provided in Chapter 4.

10.6.10 Specifically, the following primary mitigation measures are included within the development specification:

- Bespoke housing of the highest quality in terms of urban design and architecture, with particular reference to the contextual vernacular;
- Minimising tree removal and hedgerow removal;
- Restricting encroachment into root protection areas and canopies of retained trees and hedgerows;
- Maximising opportunities for tree planting to increase tree cover within the Site;
- Implementation of an on-going tree management regime to increase the longevity of the existing tree cover; and
- Generous landscaped buffers on the eastern boundary of Parcel W1 adjacent to Lanwades Hall and the lodges.

Anticipated Landscape Effects

10.6.11 It is considered that all the effects experienced by landscape receptors following implementation of the development will be permanent and long term. The predicted significance of landscape effects is summarised in **Tables 10.17** and **10.18**. For some landscape receptors, the nature of the change is predicted to change when the proposed landscaping reaches maturity; where relevant, this is indicated in brackets.

Detailed Application (Eastern Parcel)

Effects on trees within the Site

10.6.12 The quantum of trees identified for removal to facilitate the Detailed Application is low and encroachment into root protection areas and canopies of retained trees will be restricted. The magnitude of change

experienced by the trees within and adjacent to the Site (Eastern Parcel) is anticipated to be negligible and the effects are predicted to be direct, minor and neutral.

Effects on character of LLCA1: Newmarket Chalklands

- 10.6.13 Due to the quantum of intervening visual barriers, it is not predicted that LLCA 1: Newmarket Chalklands will experience any change following completion of the Detailed Application; there will therefore be no effects on the character of LLCA 1: Newmarket Chalklands.

Effects on character of LLCA2: Kennett Valley

- 10.6.14 The replacement of the existing built form and land uses associated with the former AHT on the Eastern Parcel with a coherent masterplan and associated landscaping will be experienced within the context of existing residential development on Sire Lane and Jeddah Way.
- 10.6.15 It is considered that the redevelopment of the Eastern Parcel will result in minimal change to the character of the landscape to the south and the magnitude of change experienced by LLCA 2: Kennett Valley is predicted to be negligible. The effects are predicted to be minor and neutral; the direction of effects is predicted to be neutral rather than adverse because the development will be experienced in the context of the existing settlement, representing a companionable extension to it and there will be no impact on any key landscape features which contribute to the LLCA's character, particularly the character of the river valley.
- 10.6.16 Table 10.17 summarises the predicted magnitude and significance of landscape effects relating to the operation phase of the development sought under the Detailed Application.

Table 10.17: Landscape effects and evaluation of significance – Operation Phase

Landscape Receptor	Sensitivity	Description of Change	Magnitude of Impact Year 1 (Year 15)	Nature of Change Year 1 (Year 15)	Significance of Effect
Trees within the Site	High	Introduction of built form and associated infrastructure in adjacent areas, however canopies and root protection areas protected by a management regime	Negligible	Neutral	Minor

Landscape Receptor	Sensitivity	Description of Change	Magnitude of Impact Year 1 (Year 15)	Nature of Change Year 1 (Year 15)	Significance of Effect
LLCA 1: Newmarket Chalklands	Medium	None	None	N/A	None
LLCA 2: Kennett Valley	Low	Introduction of built form and associated infrastructure to the Eastern Parcel creating a new landscape pattern and change to the character of an area adjoining the LLCA to the north	Negligible	Neutral	Minor

Hybrid Application (Eastern and Western Parcels)

Effects on trees within the Site

- 10.6.17 The quantum of trees identified for removal to facilitate development sought under the Hybrid Application is low and encroachment into root protection areas and canopies of retained trees will be restricted. The magnitude of change experienced by the trees within and adjacent to the Site (Eastern and Western Parcels) is anticipated to be low and the effects are predicted to be direct, minor and neutral.

Effects on character of LLCA1: Newmarket Chalklands

- 10.6.18 Due to the quantum of intervening visual barriers, it is not predicted that LLCA 1: Newmarket Chalklands will experience any change as a result of the development of the Eastern Parcel.
- 10.6.19 Notwithstanding the generous areas of open space and the retention of the tree belts, it is predicted that the magnitude of change experienced by the Western Parcel itself following implementation of the development proposed under the Hybrid Application will be high; unavoidable with the introduction of built form and infrastructure to a currently undeveloped green field site. However, in relation to the wider Newmarket Chalklands LLCA, the Western Parcel represents a relatively minor component of it and is separated from it by School Road and B1506.
- 10.6.20 Due to the quantum of intervening visual barriers and the relative containment of the Western Parcel, it is predicted that the character of the wider LLCA 1: Newmarket Chalklands will experience a low magnitude

of change; the effects on LLCA 1 are therefore predicted to be minor and adverse following implementation of the development proposed under the Hybrid Application.

Effects on character of LLCA2: Kennett Valley

- 10.6.21 The replacement of the existing built form and land uses associated with the former AHT in the Eastern Parcel with a coherent masterplan and associated landscaping will be experienced within the context of existing residential development on Sire Lane and Jeddah Way and it is considered that the redevelopment of the Eastern Parcel will result in minimal change to the character of the landscape to the south.
- 10.6.22 On completion, the built form and associated infrastructure introduced to the Western Parcel, which adjoins LLCA 1 to the north, will be indiscernible and will not impact on the character of the LLCA.
- 10.6.23 It is predicted that the magnitude of change experienced by LLCA 2: Kennett Valley will be negligible.
- 10.6.24 The effects on LLCA 2: Kennett Valley following completion of the development sought under the Hybrid Application are predicted to be minor and neutral; the direction of effects is predicted to be neutral rather than adverse there will be no impact on any key landscape features which contribute to the LLCA's character, particularly the character of the river valley.
- 10.6.25 Table 10.18 summarises the predicted magnitude and significance of landscape effects relating to the operation phase of the development.

Table 10.18: Landscape effects and evaluation of significance – Operation Phase

Landscape Receptor	Sensitivity	Description of Change	Magnitude of Impact	Nature of Change	Significance of Effect
Trees within the Site	High	Introduction of built form and associated infrastructure in adjacent areas, however canopies and root protection areas protected by a management regime	Low	Neutral	Minor
LLCA 1: Newmarket Chalklands	Medium	Introduction of built form and associated infrastructure to the Western Parcel creating a new landscape	Low	Adverse	Minor

Landscape Receptor	Sensitivity	Description of Change	Magnitude of Impact	Nature of Change	Significance of Effect
		pattern and change to the character			
LLCA 2: Kennett Valley	Low	Introduction of built form and associated infrastructure to the Eastern Parcel creating a new landscape pattern and change to the character	Negligible	Neutral	Minor

Anticipated Visual Effects

Detailed Application (Eastern Parcel)

- 10.6.26 A description of predicted changes in views and the resultant visual effects is provided in **Tables 10.19** and **10.20**. For some visual receptors, the nature of the change is predicted to change when the proposed landscaping reaches maturity by Year 15; for receptors where a change is predicted at Year 15, this is indicated in brackets.

Table 10.19: Visual effects and evaluation of significance – Operational Phase

Visual Receptor	Sensitivity	Description of Change	Magnitude of Impact Year 1 (Year 15)	Nature of Change Year 1 (Year 15)	Significance of Effect
RD01 - Users of B1506	Low	The proposals for Parcel E2 are for it to be predominantly retained as open space; only glimpsed views of built form are predicted from the stretch of road adjacent to Parcel E2	Negligible	N/A	None

Visual Receptor	Sensitivity	Description of Change	Magnitude of Impact Year 1 (Year 15)	Nature of Change Year 1 (Year 15)	Significance of Effect
RD02 - Users of School Road	Low	None	None	N/A	None
RD03 - Users of Norfolk Road	Low	None	None	N/A	None
RE01 – Residents of Byerley Close and Larnach Drive	Medium	Buildings 19, 20 and 21 will be replaced in the view by built form of a more contextual and attractive design	Low	Beneficial	Minor
RE02 – Residents of Farriers Way	Medium	The quantum of built form in views southwards above the boundary close board fencing will slightly increase, however views of The Vaccine Centre (Building 31) will be replaced by glimpses of the rooves of built form of a more contextual and attractive design	Low	Neutral	Minor
RE03 – Residents of Jeddah Way	Medium	The quantum of built form in views westwards will increase, however views of The Vaccine Centre (Building 31) will be replaced by views of built form of a more contextual and attractive design. At Year 15, when the	Low	Adverse (Neutral)	Minor

Visual Receptor	Sensitivity	Description of Change	Magnitude of Impact Year 1 (Year 15)	Nature of Change Year 1 (Year 15)	Significance of Effect
		landscaping has reached maturity, it is predicted that the direction of effects will no longer be adverse but will be neutral			
VIS01 – Visitors to Lanwades Hall	Medium	Possible glimpses of rooves of built form within Parcels E3 and E4 above the intervening vegetation and boundary fence. replacing views of existing built form associated with the former AHT	Negligible	N/A	None

Hybrid Application (Eastern and Western Parcels)

10.6.27 A description of predicted changes in views and the resultant visual effects is provided in **Table 10.20**. For some visual receptors, the nature of the change is predicted to change when the proposed landscaping reaches maturity by Year 15; for receptors where a change is predicted at Year 15, this is indicated in brackets.

Table 10.20: Visual effects and evaluation of significance – Operational Phase

Visual Receptor	Sensitivity	Description of Change	Magnitude of Impact Year 1 (Year 15)	Nature of Change Year 1 (Year 15)	Significance of Effect
RD01 - Users of B1506	Low	The proposals for Parcel E2 and the northern extent of Parcels W1 and W2 are for them to be predominantly retained as open space; glimpsed	Medium	Adverse	Minor

Visual Receptor	Sensitivity	Description of Change	Magnitude of Impact Year 1 (Year 15)	Nature of Change Year 1 (Year 15)	Significance of Effect
		views of built form are predicted from the stretch of road adjacent to the Site and along the two access roads			
RD02 - Users of School Road	Low	Users of School Road will experience glimpses of built form in Parcel W2 above the hedgerow and along the access road from the northern stretch of the road as it passes the Site	Low	Adverse	Minor
RD03 - Users of Norfolk Road	Low	Users of Norfolk Road will have glimpses of built form in Parcel W2 through the boundary vegetation as they approach the junction with B1506, however built form is set back from the junction	Negligible	N/A	None
RE01 – Residents of Byerley Close and Larnach Drive	Medium	Buildings 19, 20 and 21 will be replaced in the view by built form of a more contextual and attractive design	Low	Beneficial	Minor

Visual Receptor	Sensitivity	Description of Change	Magnitude of Impact Year 1 (Year 15)	Nature of Change Year 1 (Year 15)	Significance of Effect
RE02 – Residents of Farriers Way	Medium	The quantum of built form in views southwards above the boundary close board fencing will slightly increase, however views of The Vaccine Centre (Building 31) will be replaced by glimpses of the rooves of built form of a more contextual and attractive design	Low	Neutral	Minor
RE03 – Residents of Jeddah Way	Medium	The quantum of built form in views westwards will increase, however views of The Vaccine Centre (Building 31) will be replaced by views of built form of a more contextual and attractive design. At Year 15, when the landscaping has reached maturity, it is predicted that the direction of effects will no longer be adverse but will be neutral	Low	Adverse (Neutral)	Minor

Visual Receptor	Sensitivity	Description of Change	Magnitude of Impact Year 1 (Year 15)	Nature of Change Year 1 (Year 15)	Significance of Effect
VIS01 – Visitors to Lanwades Hall	Medium	Possible glimpses of rooves of built form within Parcels E3 and E4 above the intervening vegetation and boundary fence. replacing views of existing built form associated with the former AHT. Possible glimpsed views of built form in Parcel W1 at Year 1. These views will soften and be screened when the recent tree planting has reached maturity. At Year 15, when the landscaping has reached maturity, it is predicted that the direction of effects will no longer be adverse but will be neutral	Low	Adverse (Neutral)	Minor

Additional Mitigation

10.6.28 No additional mitigation to that specified in Chapter 5 of this volume of the ES is proposed as part of this assessment.

Residual Effects

10.6.29 The residual landscape and visual effects during the construction and operational phases of the development are summarised in **Tables 10.13 - 10.20**. A summary is provided in **Table 10.21**.

10.7 Implications of Climate Change

- 10.7.1 The likely effects of the development are defined under the current climate conditions, which may alter under a future climate scenario. The EIA regulations (2017) require that receptors' resilience to change and any change in impact magnitude are considered in respect of a future climate condition.
- 10.7.2 The palette of species for the Detailed Application have been selected for their resilience to climate change and the magnitude of impact and resultant nature and scale of the effects of the Detailed Application predicted during the operational phase are not anticipated to change under future climate conditions. It is assumed that the palette of species selected for the outline element of the Hybrid Application would apply similar criteria.
- 10.7.3 Overall, it is considered that the likely landscape and visual effects of the development are unlikely to change as a result of climate change.

10.8 Cumulative Assessment of Effects, Mitigation and Residual Effects

- 10.8.1 Three cumulative developments in the surrounding area which have been consented or are pending a decision have been identified as potentially relevant to the assessment of inter-project effects, however, due to their distance from the Site and the quantum of intervening visual barriers, it is not considered that any of the identified cumulative developments would be visible in views towards the development and therefore has the potential to result in cumulative landscape or visual effects with the development.
- 10.8.2 Overall, therefore it is considered that the likely cumulative landscape and visual effects of the development – both the Detailed Application and the Hybrid Application - would remain unchanged.

10.9 Summary

- 10.9.1 The landscape and visual impact assessment in this Chapter has been carried out in accordance with accepted Landscape Institute guidance (GLVIA3). The assessment has established the sensitivity of the identified landscape and visual receptors and the significance of any residual effects which may be associated with the construction and operational phases of the development. The assessment considers the significance of effects for both the Detailed Application and the Hybrid Application separately on landscape features, the character of the existing landscape and on the views experienced by people (visual receptors) whose views may change during the construction and following completion of the development.
- 10.9.2 The Site is not covered by any designation which would denote landscape value at the national, regional or local level and does not fall within a Locally Valued Landscape as defined in the West Suffolk Review of Local Landscape Designations prepared as part of the evidence base for the emerging West Suffolk Local Plan.
- 10.9.3 Published landscape character assessments, relevant guidance and policy and field surveys have informed the identification of landscape and visual receptors.
- 10.9.4 The landscape receptors which could experience direct effects are identified as:

- Trees within the Site and on the Site boundaries;

10.9.5 The landscape character receptors which could experience indirect effects as a result of the development are:

- Local Landscape Character Area (LLCA) 1: Newmarket Chalklands; and
- LLCA 2: Kennett Valley

10.9.6 The field studies identified that due to the contained character of the Site, the quantum of intervening visual barriers and the limited number of publicly accessible locations from which it is visible, the Site has a small visual envelope.

10.9.7 Where there are views of the Site, these are limited to short distance views from local roads and properties adjoining the Site boundary.

10.9.8 The following potential visual receptor groups have been identified, none of whom are assessed as being of high sensitivity:

- Users of roads (RD);
- Residents (RE); and
- Visitors to hospitality venues (VIS)

10.9.9 17 representative views were identified to demonstrate the visibility of the Site from the visual receptors, and therefore the potential visibility of the development.

Effects during Demolition and Construction

10.9.10 Works during the demolition and construction stages typically relate to visual effects associated with the enclosure of a site with fencing or hoarding and views of construction plant, increased noise levels and increased traffic movements.

Detailed Application (Eastern Parcel)

10.9.11 During the demolition and construction phase, temporary landscape effects will be experienced both on the Eastern Parcel and within the wider study area, however, except for the limited removal of some trees, all the effects are predicted to be temporary and would be mitigated as far as practicable through good construction site practice measures set out in a CEMP, such as hoarding and a construction lighting strategy. Adverse visual effects during the construction phase of the Detailed Application will be experienced by users of B1506 which passes to the north of the Site and residents of properties which adjoin the Eastern Parcel.

Hybrid Application (Eastern Parcel and Western Parcel)

- 10.9.12 During the demolition and construction phase, temporary landscape effects will be experienced both on the Site and within the wider study area, however, except for the limited removal of some trees, all the effects are predicted to be temporary and would be mitigated as far as practicable through good construction site practice measures set out in a CEMP, such as hoarding and a construction lighting strategy. Adverse visual effects during the construction phase of the Hybrid Application will be experienced by users of local roads adjacent to the Site, residents of some properties which adjoin the Site and visitors to Lanwades Hall.

Effects during Operation

- 10.9.13 On completion, the character of the Site will permanently change due to the introduction of a new land use and character. Features of the development which respond to the landscape and visual context and provide mitigation comprise:
- Bespoke housing of the highest quality in terms of urban design and architecture, with particular reference to the contextual vernacular;
 - Minimising tree removal and hedgerow removal;
 - Restricting encroachment into root protection areas and canopies of retained trees and hedgerows;
 - Maximising opportunities for tree planting to increase tree cover within the Site;
 - Implementation of an on-going tree management regime to increase the longevity of the existing tree cover; and
 - Generous landscaped buffers on the eastern boundary of Parcel W1 adjacent to Lanwades Hall and the lodges.

Detailed Application (Eastern Parcel)

- 10.9.14 The number of trees identified for removal to facilitate the Detailed Application is low and encroachment into root protection areas and canopies of retained trees will be restricted. The effects on the trees within and adjacent to the Site is predicted to be minor and neutral.
- 10.9.15 Due to the quantum of intervening visual barriers and distance, it is not predicted that LLCA 1: Newmarket Chalklands will experience any change following completion of Detailed Application and there will therefore be no effects on the character of LLCA 1: Newmarket Chalklands.
- 10.9.16 The replacement of the existing built form and land uses associated with the former AHT on the Eastern Parcel with a coherent masterplan and associated landscaping will result in minimal change to the character of the area. The effects experienced by LLCA 2: Kennett Valley are predicted to be minor and neutral since the Eastern Parcel is already developed and there will be no impact on any key landscape features which contribute to the character of the wider LLCA and specifically, the character of the river valley.

- 10.9.17 On completion, the Detailed Application will be visible from limited locations, specifically residents of some adjoining properties. The only visual receptors for whom adverse visual effects are predicted are residents of properties on Jeddah Way at Year 1, however these are predicted to become neutral at Year 15 when the proposed landscaping has reached maturity.

Hybrid Application (Eastern and Western Parcel)

- 10.9.18 The number of trees identified for removal to facilitate the Hybrid Application is low and encroachment into root protection areas and canopies of retained trees will be restricted. The effects experienced by the trees within and adjacent to the Site are predicted to be direct, minor and neutral.
- 10.9.19 It is predicted that the magnitude of change experienced by the Western Parcel itself following completion of the Hybrid Application will be high, due to the introduction of built form and infrastructure to a currently undeveloped site. However, due to the quantum of intervening visual barriers and the relative containment of the Western Parcel, it is predicted that the effect on the character of the wider LLCA 1: Newmarket Chalklands, of which the Western Parcel forms a relatively small part, will be minor and adverse.
- 10.9.20 The replacement of the existing built form and land uses associated with the former AHT in the Eastern Parcel with a coherent masterplan and associated landscaping will be experienced within the context of the existing settlement. The development will introduce built form and associated infrastructure to the Western Parcel, which adjoins LLCA 2 to the north, however the development will not impact on the character of the LLCA and it is predicted that the effects on LLCA 2: Kennett Valley following completion of the Hybrid Application will be minor and neutral.
- 10.9.21 There will be glimpsed views of the completed development from limited stretches of road in the immediate vicinity of the Site, such as B1507 and School Road, resulting in minor and adverse effects on these views. Minor adverse effects are predicted for residents of some adjoining properties and for visitors to Lanwades Hall; these effects are predicted to become neutral at Year 15 when the landscaping has matured.
- 10.9.22 A summary of the assessment of the significance of residual landscape and visual effects is set out in **Table 10.21**.

Table 10.21: Summary of residual landscape and visual effects

Receptor	Sensitivity of Receptor	Magnitude of Impact (Year 15)	Significance of Effect (Year 15)	Proposed Mitigation	Residual Effect (Year 15)	Significant/ Not significant
Construction Phase						
Detailed Application						
Trees within the Site	High	Negligible	Minor and adverse	N/A	Minor and adverse	Not significant

Receptor	Sensitivity of Receptor	Magnitude of Impact (Year 15)	Significance of Effect (Year 15)	Proposed Mitigation	Residual Effect (Year 15)	Significant/ Not significant
LLCA 1: Newmarket Chalklands	Medium	Negligible	None	N/A	None	Not significant
LLCA 2: Kennett Valley	Medium	Negligible	None	N/A	None	Not significant
RD01 - Users of B1506	Low	Low	Minor and adverse	N/A	Minor and adverse	Not significant
RD02 - Users of School Road	Low	None	None	N/A	None	Not significant
RD03 - Users of Norfolk Road	Low	None	None	N/A	None	Not significant
RE01 – Residents of Byerley Close and Larnach Drive	Medium	Low	Minor and adverse	N/A	Minor and adverse	Not significant
RE02 – Residents of Farriers Way	Medium	Low	Minor and adverse	N/A	Minor and adverse	Not significant
RE03 – Residents of Jeddah Way	Medium	Low	Minor and adverse	N/A	Minor and adverse	Not significant
VIS01 – Visitors to Lanwades Hall	Medium	Negligible	None	N/A	None	Not significant

Receptor	Sensitivity of Receptor	Magnitude of Impact (Year 15)	Significance of Effect (Year 15)	Proposed Mitigation	Residual Effect (Year 15)	Significant/ Not significant
Hybrid Application						
Trees within the Site	High	Negligible	Minor and adverse	N/A	Minor and adverse	Not significant
LLCA 1: Newmarket Chalklands	Medium	Low	Minor and adverse	N/A	Minor and adverse	Not significant
LLCA 2: Kennett Valley	Medium	Negligible	None	N/A	None	Not significant
RD01 - Users of B1506	Low	Medium	Moderate and adverse	N/A	Moderate and adverse	Significant
RD02 - Users of School Road	Low	Low	Minor and adverse	N/A	Minor and adverse	Not significant
RD03 - Users of Norfolk Road	Low	Negligible	None	N/A	None	Not significant
RE01 – Residents of Byerley Close and Larnach Drive	Medium	Low	Minor and adverse	N/A	Minor and adverse	Not significant
RE02 – Residents of Farriers Way	Medium	Low	Minor and adverse	N/A	Minor and adverse	Not significant
RE03 – Residents of Jeddah Way	Medium	Low	Minor and adverse	N/A	Minor and adverse	Not significant

Receptor	Sensitivity of Receptor	Magnitude of Impact (Year 15)	Significance of Effect (Year 15)	Proposed Mitigation	Residual Effect (Year 15)	Significant/ Not significant
VIS01 – Visitors to Lanwades Hall	Medium	Low	Minor and adverse	N/A	Minor and adverse	Not significant
Operation						
Detailed Application						
Trees within the Site	High	Negligible	Minor and neutral	N/A	Minor and neutral	Not significant
LLCA 1: Newmarket Chalklands	Medium	Negligible	None	N/A	None	Not significant
LLCA 2: Kennett Valley	Medium	Low	Minor and neutral	N/A	Minor and neutral	Not significant
RD01 - Users of B1506	Low	Negligible	None	N/A	None	Not significant
RD02 - Users of School Road	Low	None	None	N/A	None	Not significant
RD03 - Users of Norfolk Road	Low	None	None	N/A	None	Not significant
RE01 – Residents of Byerley Close and Larnach Drive	Medium	Low	Minor and beneficial	N/A	Minor and beneficial	Not significant
RE02 – Residents	Medium	Low	Minor and neutral	N/A	Minor and neutral	Not significant

Receptor	Sensitivity of Receptor	Magnitude of Impact (Year 15)	Significance of Effect (Year 15)	Proposed Mitigation	Residual Effect (Year 15)	Significant/ Not significant
of Farriers Way						
RE03 – Residents of Jeddah Way	Medium	Low	Minor and adverse (Minor and neutral)	N/A	Minor and adverse (Minor and neutral)	Not significant
VIS01 – Visitors to Lanwades Hall	Medium	Negligible	None	N/A	None	Not significant
Hybrid Application						
Trees within the Site	High	Low	Minor and neutral	N/A	Minor and neutral	Not significant
LLCA 1: Newmarket Chalklands	Medium	Low	Minor and adverse	N/A	Minor and adverse	Not significant
LLCA 2: Kennett Valley	Medium	Negligible	Minor and neutral	N/A	Minor and neutral	Not significant
RD01 - Users of B1506	Low	Medium	Minor and adverse	N/A	Minor and adverse	Not significant
RD02 - Users of School Road	Low	Low	Minor and adverse	N/A	Minor and adverse	Not significant
RD03 - Users of Norfolk Road	Low	Negligible	None	N/A	None	Not significant
RE01 – Residents of Byerley Close and	Medium	Low	Minor and beneficial	N/A	Minor and beneficial	Not significant

Receptor	Sensitivity of Receptor	Magnitude of Impact (Year 15)	Significance of Effect (Year 15)	Proposed Mitigation	Residual Effect (Year 15)	Significant/ Not significant
Larnach Drive						
RE02 – Residents of Farriers Way	Medium	Low	Minor and neutral	N/A	Minor and neutral	Not significant
RE03 – Residents of Jeddah Way	Medium	Low	Minor and adverse (Minor and neutral)	N/A	Minor and adverse (Minor and neutral)	Not significant
VIS01 – Visitors to Lanwades Hall	Medium	Low	Minor and adverse (Minor and neutral)	N/A	Minor and adverse (Minor and neutral)	Not significant

11.0 NOISE

11.1 Introduction

- 11.1.1 Application Sites with respect to noise and vibration. It describes the methods used to assess the effects; the baseline conditions currently existing at the Application Sites and surrounding area; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.
- 11.1.2 The assessment takes into account current legislation, policy and technical guidance as well as noise survey data and traffic flow data supplied by RPS.
- 11.1.3 The chapter assesses the effect of development on noise sensitive receivers during both the demolition/construction phase and the operational phase.

Table 11.1: Appendices List

Appendix No.	Document
11.1:	Noise and Vibration

11.2 Assessment Criteria and Methodology

Geographical Scope

- 11.2.1 The assessment considers baseline monitoring data in the vicinity of the site, residential and commercial receptors offsite, and onsite conditions.
- 11.2.2 The site boundary as indicated in Figure 11.1. The eastern part of the site will be the subject of a detailed assessment and western part of an outline assessment.

Temporal Scope

- 11.2.3 The assessment considers the existing baseline conditions (2024) and predicted conditions for the year of 2031 (post completion) with and without the development in place.
- 11.2.4 The indicative phasing is set out at Chapter 5.
- 11.2.5 As a detailed program for demolition and construction has not yet been developed only two phases are assumed in the assessment: 1) demolition and 2) construction, occurring one after the other. It is assumed that works happen simultaneously on all plots (for the demolition and then for the construction phase), as this constitutes the worst case scenario. The traffic noise assessment is undertaken for post

completion conditions (2031) as it represents worst case scenario in terms of the residents' noise exposure to traffic noise.

Assumptions and Limitations

- 11.2.6 Noise measurements were used to construct/calibrate the baseline noise model. Construction noise predictions have been undertaken using typical items of plant that might be expected to be found on construction sites for this type of development. These have been selected using professional judgement. However, they may not be exactly representative of the plant that is used during the construction process. In addition, the exact time periods and programme is not fully known at the time of assessment. In fact, the programme is indicative and subject to detailed planning and reserved matters application on the outline element of the scheme.
- 11.2.7 In view of the above the demolition and construction noise assessment assesses a conservative representative scenario. Noise predictions may therefore overestimate noise levels for the majority of the demolition / construction phases, and is therefore considered a reasonable worst case.
- 11.2.8 Refer to Appendix 11.1: Noise and Vibration for further details on the noise survey methodology and assessments.
- 11.2.9 Construction vibration is also difficult to predict given the unknown parameters such as construction methods, pile dimensions soil conditions and pile locations. A conservative assessment was undertaken based on available data in BS 5228-2.

11.3 Methodology

- 11.3.1 This section of the Noise and Vibration chapter presents:
- Sources of information that have been available and consulted during the preparation of the Noise and Vibration chapter;
 - Methodology used to determine the Baseline Noise Environment;
 - Methodology used to assess the effects of noise and vibration. This includes criteria relating to sensitivity of receptor, and magnitude of change from the existing ('baseline') condition; and
 - The significance criteria for assessment of the residual effects of noise and vibration.

Sources of Information

- 11.3.2 Sources of information relating to the development that have been reviewed, and that help to form the basis of assessment of likely significant effects on noise and vibration include:
- Site plans and elevations;

- Construction programme methodology and typical plant (see Appendix 11.1: Noise and Vibration);
- Road traffic flow data during demolition and construction (see Appendix 11.1: Noise and Vibration) and operation of the Proposed Development provided by the Applicant's Transport Consultants – RPS); and
- Relevant noise and vibration standards and guidance (see Appendix 11.1: Noise and Vibration).

Baseline Noise Monitoring Methodology

- 11.3.3 Noise surveys were undertaken on site in order to establish the baseline noise environment (feeding into an environmental noise software model of the site and surroundings).
- 11.3.4 As the site and surrounding area, including the nearest existing sensitive receptors, extends over a large area, three long term (unattended) noise measurements have been undertaken.
- 11.3.5 A summary of the measurement locations is presented in Table 11.1 and in Figure 11.1.

Table 11.1: Noise Monitoring Locations

Date	Location	Type		Description
13/05/2024 - 17/10/2024	MP1	Long term	5+ months	Measurement of Lanwades Hall events music noise levels at a location adjacent to Planning Condition 12 Location 1
13/05/2024 - 17/10/2024	MP2	Long term	5+ months	Measurement of Lanwades Hall events music noise levels at a location adjacent to Planning Condition 12 Location 2
29/04/2024 - 06/05/2024	MP3	Long term	6 days	Measurement of traffic noise at a location adjacent to The Stables

- 11.3.6 Further information on the noise survey methodology, dates and locations as well as terminology and noise modelling are provided in Appendix 11.1 Noise and Vibration.



Figure 11.1 Aerial image (courtesy of Google Maps) of the site showing noise survey locations. Site boundary is indicated by a blue line.

Existing Vibration

- 11.3.7 The nearest railway is located over 800m to the north of the site. Baseline vibration levels at the site are therefore considered not significant and no site survey measurements have been undertaken.

Future Baseline Conditions / Do-Nothing Scenario

- 11.3.8 The future 'do nothing' baseline scenario considers the cumulative effects of the surrounding developments or schemes in the absence of the development.
- 11.3.9 The future scenario with the development has then been assessed.
- 11.3.10 Noise characteristics from new noise sources associated with the development (such as estimated traffic flows from new roads) have been incorporated into the 3D environmental noise model and predicted noise levels at the relevant locations / building facades are determined.

Methodology for Determining Noise Sensitive Receptors

- 11.3.11 In order to assess the potential impacts associated with noise and vibration levels from the construction and operational phases of the development, nearby properties or locations whose occupants have been considered most sensitive to disturbance by adverse noise and vibration levels have been identified.
- 11.3.12 These noise sensitive receptors (NSRs) have been deemed representative of all key noise sensitive receptors near to the Application Sites.
- 11.3.13 It is therefore considered that should noise levels be suitably controlled at the identified receptors, then noise levels will also be suitably controlled at all other noise sensitive receptors in the area surrounding the site.
- 11.3.14 Key existing noise sensitive receptors that could potentially be affected by development during the demolition, construction and operational phases are considered to be:
- Dwellings located around the site;
 - Lanwades Hall;
 - Commercial Buildings;

Methodology for Determining the Suitability of the Site for the Development

Internal Noise Levels

- 11.3.15 The modelled external noise environment has been used to inform the design of facades for the residential elements of the development.
- 11.3.16 The facades of the development will be designed to ensure the provision of internal noise conditions in accordance with appropriate requirements.
- 11.3.17 For residential receptors, the design standards are indoor ambient noise levels defined in BS8233:2014, noted in Table 11.2.

Table 11.2 Indoor ambient noise levels for dwellings (BS 8233).

Activity	Location	07:00 to 23:00	23:00 – 07:00
Resting	Living Room	35 dB L _{Aeq,16hour}	-
Dining	Dining room/area	40 dB L _{Aeq,16hour}	-
Sleeping (daytime resting)	Bedroom	35 dB L _{Aeq,16hour}	30 dB L _{Aeq,8hour}

- 11.3.18 Consideration has also been given in the current designs to the relationship between sleep disturbance and individual night-time noise events. ProPG defines this target such that a peak noise level of 45 dB LAF_{max} is not exceeded more than 10 times a night.

- 11.3.19 Given that Lanwades Hall (see Figure 11.1) regularly hosts weddings events, which usually involve amplified music being played back at Lanwades Hall external spaces (e.g., Sunken Garden, Lawn) consideration is also given to the impact of music noise on the internal noise levels of residential units.
- 11.3.20 Particular attention is given to low frequency music noise and the criteria adopted here is that from NANR45 – Criteria Revision 1 December 2011. The targets recommended in this document relevant to the proposed development are summarized in Table 11.3.

Table 11.3 Indoor ambient noise levels targets at Low Frequencies (NANR45).

	dB Leq 63 Hz 1/1 octave band	dB Leq 125 Hz 1/1 octave band
Max Noise Levels	47	41

External Noise Levels

- 11.3.21 BS 8233 provides guidance on desirable upper limits for external noise levels in external areas used as traditional amenity space, such as gardens and patios. This noise level is 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$. The standard also accepts that this may not be achievable in all circumstances where development might be desirable. In this situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces.
- 11.3.22 The standard also acknowledges that in balconies it might not be possible to meet these guideline noise levels at the outer edge of these areas, but should be achievable in some areas of the space.
- 11.3.23 ProPG also provides guidance on noise in external amenity areas. Guideline noise levels are similar to BS 8233. The document also provides additional guidance on offsetting significant adverse noise impacts on private external amenity space by providing residents, through the design of the development or the planning process, with access to:
- a relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings; and/or
 - a relatively quiet, protected, publically accessible, external amenity space (e.g. a public park) that is nearby.

Construction Assessment Methodology

Demolition and Construction Noise

- 11.3.24 The demolition and construction program is outlined in Table 11.4. Demolition and construction work is assumed to be happen sequentially, that is, demolition of all structures occurs at a first phase and once completed construction works will start.

- 11.3.25 Specific details of the construction works associated with the development will be available following completion of the detailed design and detailed construction methodology and when a contractor is appointed. At this stage, representative construction activities, including the likely type and number of construction plant, have been selected using professional judgement.

Demolition	Start	End	Construction	Start	End
Plot A, B, C, D, E	Q2 2026	Q2 2026	Plot A, B, C, D, E	Q3 2026	Q3 2029
Plot F1, F2, G1, G2, H1, H2, J1, J2, J3, K1, K2, L	Q2 2026	Q2 2026	Plot F1, F2, G1, G2, H1, H2, J1, J2, J3, K1, K2, L	Q3 2028	Q3 0231

Table 11.4 Selected assessment periods from demolition and construction programme.

- 11.3.26 Noise predictions of demolition and construction activities have been undertaken using SoundPLAN noise modelling software, applying methodologies described within BS 5228-1. The calculation method is based on the number and type of equipment operating, the associated sound power level (L_w) and the distance between the equipment and sensitive receptors.
- 11.3.27 Sound power levels (L_w) for particular items of equipment have been sourced from BS 5228-1:2009 (+A1:2014). A list of plant included in the noise assessment for each Assessment Period is provided in Appendix 11.1: Noise and Vibration.
- 11.3.28 Annex E of BS 5228-1 also provides guidance on acceptable levels of construction noise and example criteria for the assessment of the significance of construction noise effects. One of the criteria within BS 5228 refers to the Department of the Environment (now the Department for Environment, Food and Rural Affairs (Defra) Advisory Leaflet AL72, 1976.
- 11.3.29 AL72 states that, during the daytime period, the noise level outside the nearest occupied room of a residential property or office should not exceed the values reproduced here in Table 11.5.

Environment	Recommended Daytime Façade Noise Level L _{Aeq,T}
Urban areas close to main roads	75 dB
Rural, suburban and urban areas away from main traffic and industrial noise sources areas	70 dB

Table 11.5 AL72 – Construction Noise Limits.

- 11.3.30 Also set out in BS 5228-1 annex E is the ‘ABC’ method for assessing the impact from construction noise on residential receptors by comparing it to the existing ambient noise level. The categories and threshold values are set out in Table 11.6.

Assessment Category and Threshold Value Period (L_{Aeq})	Threshold Value (dB)		
	Category A ^{A)}	Category B ^{B)}	Category C ^{C)}
Night-time (23:00-07:00)	45	50	55
Evenings and weekends ^{D)}	55	60	65
Daytime (07:00-19:00) and Saturdays (07:00-13:00)	65	70	75
<p>NOTE 1 A significant effect has been deemed to occur if the total L_{Aeq} noise level, including construction, exceeds the threshold level for the Category appropriate to the ambient noise level.</p> <p>NOTE 2 If the ambient noise level exceeds the threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a significant effect is deemed to occur if the total L_{Aeq} noise level for the period increases by more than 3dB due to construction activity.</p> <p>NOTE 3 Applied to residential receptors only.</p> <p>^{A)} Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.</p> <p>^{B)} Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.</p> <p>^{C)} Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.</p> <p>^{D)} 19.00-23.00 weekdays, 13.00-23.00 Saturdays and 07.00-23.00 Sundays.</p>			

Table 11.6 BS 5228-1 ABC Method Category Thresholds.

- 11.3.31 BS 5228-1 annex E also sets out the '5 dB(A) change' method, which is used here for non-residential receptors. In this method noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB $L_{Aeq,T}$ from site noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant effect.
- 11.3.32 Based on the guidance in BS 5228-1, the criterion considered in this chapter for the onset of potentially significant effects at residential receptors is set in line with the ABC or '5 dB above' thresholds. A semantic scale adopted for the description of the magnitude of noise impacts, Table 11.7, is based on the predicted noise levels measured outside the identified receptors.

Exceedance of Construction Noise, over Threshold Value	Magnitude of Impact Description
< - 5 dB	Very Low
-5 to 0 dB	Low
0 to 10 dB	Medium
> 10 dB	High

Table 11.7 Magnitude of Impact for Demolition and Construction Noise.

Demolition and Construction Vibration

- 11.3.33 Table 11.8 details Peak Particle Velocity (PPV) vibration levels and provides a semantic scale for the description of construction vibration effects on human receptors. It is based on guidance contained in BS 5228-2, Table B.1.

- 11.3.34 For residential receptors, and other high sensitivity receptors, such as schools and churches, the Lowest Observed Adverse Effect Level (LOAEL) has been defined as a PPV of 1.0 mm/s during the daytime. The Significant Observed Adverse Effect Level (SOAEL) has been defined as a PPV of 10.0 mm/s during the daytime.
- 11.3.35 In addition to human annoyance, building structures may be damaged by high levels of vibration. The levels of vibration that may cause building damage are far in excess of those that may cause annoyance. Consequently, if vibration levels are controlled to those specified by human annoyance then it is very unlikely that buildings will be damaged by construction vibration. This is illustrated by Table B.2 of BS 5228-2, which provides a transient vibration guide values for cosmetic damage. These values are limits, above which, cosmetic damage could occur. The lowest value in this table is 15 mm·s⁻¹, higher than the Significant Observed Adverse Effect Level.
- 11.3.36 BS 5228-2 also indicates that construction activities (particularly piling) usually only generate significant vibration effects when they are located within 20 m of sensitive locations. The effect depends on the type of piling, ground conditions and receptor distance. Consideration of the types of piling and distances is given in the assessment presented in this chapter.

Peak Particle Velocity (mm/s)	Description of Effect	Magnitude of Effect
< 0.3	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.	Very Low
0.3 to < 1.0	Vibration might be just perceptible in residential environments.	Low
1.0 to < 10.0	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.	Medium
> 10.0	Vibration is likely to be intolerable for any more than a very brief exposure to this level.	High

Table 11.8 Magnitude of Vibration (PPV) Effects.

Construction Traffic Noise

- 11.3.37 Construction traffic noise levels have been calculated with reference to methodology within the CRTN which contains an equation for the calculation of the predicted noise level from a road in terms of the 18-hour AAWT (Average Annual Weekday Traffic) flow from 06:00 to 24:00.
- 11.3.38 Noise levels are established with reference to the current baseline noise levels ($L_{Aeq,T}$) predicted at the identified noise sensitive receptors and predicted change in noise levels due to traffic flow changes. As the details of the construction program and methodology are yet to be developed a worstcase situation was assumed with demolition and construction traffic at its maximum predicted levels throughout demolition and construction works (refer to Appendix 11.1 Noise and Vibration for further details). Where

required (for indicative purposes) noise levels can be translated from $L_{Aeq,T}$ to $LA_{10,18hr}$ in line with methodology published by Defra.

- 11.3.39 The magnitude of a noise impact due to changes in road traffic noise levels is assessed with reference to criteria outlined in the DMRB and is provided in Table 11.9. These criteria have been based on Table 3.1 of DMRB.

Noise Change ($L_{Aeq,16hr}$)	Magnitude of Impact
0 dB	No Change
0.1 - 0.9 dB	Very Low
1 - 2.9 dB	Low
3 - 4.9 dB	Medium
5 dB or more	High

Table 11.9 Road Traffic Noise Assessment Criteria – Construction Traffic.

- 11.3.40 It is generally accepted that changes in noise levels of 1 dBA or less are imperceptible, and changes of 3 dB may be perceptible to the average human ear. Consequently, the LOAEL is set at a change in traffic noise of +1 dBA and the SOAEL at +5 dBA.

Operational Assessment Methodology

Operational Vibration

- 11.3.41 The Development is not expected to generate vibration above existing levels of ambient vibration when operational. Therefore, operational vibration levels have not been assessed.

Road Traffic Noise

- 11.3.42 The development has the potential to have an impact on traffic flows on existing roads in the area surrounding the site once the development is operational. The assessment focuses on the potential impact at existing residential properties and commercial buildings located along affected roads.
- 11.3.43 Operational road traffic noise has been assessed by considering the change in traffic flows following the completion of the Proposed Development, with reference to both the CRTN and DMRB. Road traffic flows for the following scenarios were provided by the Traffic and Transport Consultants (refer to Appendix 11.1 Noise and Vibration for further details):
- Current baseline 2024;
 - Future 2031 baseline; and
 - Future 2031 baseline + Proposed Development scheme.

- 11.3.44 The future (2031) baseline scenario is, by definition, cumulative, because it includes anticipated future traffic flow data due to the included cumulative schemes in the assessment (i.e. future traffic flows, not a result of the Proposed Development).
- 11.3.45 Changes in noise levels are established with reference to the current baseline noise levels ($L_{Aeq,T}$) predicted at the identified noise sensitive receptors, and predicted change in noise levels due to traffic flow changes.
- 11.3.46 The magnitude of a noise impact due to changes in road traffic noise levels is assessed with reference to criteria outlined in the DMRB and is provided in Table 11.10. These criteria are based on Table 3.1 of DMRB.

Magnitude of Impact	Noise Change, $L_{Aeq,16hr}$
No Change	0 dB
Very Low	0.1 to 0.9 dB
Low	1 to 2.9 dB
Medium	3 to 4.9 dB
High	5 dB or more

Table 11.10 Road Traffic Noise Assessment Criteria – Operational Traffic.

Building Services and Plant Noise

- 11.3.47 BS 4142 provides a means of assessing the potential impact of building services and plant noise emissions associated with the development. The methodology is based on a comparison between the representative background sound level in the vicinity of the receptor (without the plant noise source operating) and the 'rating level' of the operating noise source under consideration. These parameters are defined as follows:
- Representative Background Sound Level, $L_{AF90,T}$, defined in the Standard as the 'A-weighted sound pressure level that is exceeded by the residual sound for 90% of a given time interval, T, measured using time interval F and quoted to the nearest whole number of decibels';
 - Specific Sound Level, $L_{Aeq,Tr}$, defined in the Standard as the 'equivalent continuous sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, Tr; and
 - Rating Level, $L_{Ar,Tr}$, defined in the Standard as 'the specific sound level plus any adjustment made for the characteristic features of the sound'.
- 11.3.48 BS 4142 allows for, in the worst case, a cumulative +18 dB correction to be applied to the specific sound level based upon the presence or expected presence of any of the following:
- Tonality – up to +6 dB penalty;

- Impulsivity – up to +9 dB penalty; and
- Other sound characteristics (neither tonal nor impulsive but still distinctive) – up to +3 dB penalty.

11.3.49 BS 4142 provides guidance as to the likely response from sensitive residential receptors to new fixed noise sources (e.g. building plant or services) through comparison of the rating level of the new noise source with the existing representative background sound level. The higher the rating noise level in comparison to the representative background sound level, the greater the magnitude of the impact.

11.3.50 BS 4142 requires separate analysis for day and night time periods.

11.3.51 The criteria for determining the potential magnitude of impact of noise emissions on noise sensitive receptors are presented in Table 11.11.

Noise Rating Level	Description	Magnitude of Impact
< 0 dB (i.e. where rating level is below the representative background sound level)	An indication of the specific noise source having a low impact, depending on the context.	Very Low
0 dB (i.e. where rating level does not exceed the representative background sound level)	An indication of the specific noise source having a low impact, depending on the context.	Low
Around +5 dB above background	Likely to be an indication of an adverse impact, depending on the context.	Medium
+10 dBA or more above background	Likely to be an indication of a significant adverse impact, depending on the context.	High

Table 11.11 BS 4142 Noise Rating.

11.3.52 For assessment purposes, the LOAEL is set at a rating level equal to the representative background sound level and the SOAEL is set at a rating level of +10 dBA above the representative background sound level.

11.3.53 At this stage, detailed information regarding fixed plant noise sources associated with the Proposed Development is not available. The criteria detailed in Table 11.10 will be used to set appropriate noise limits for plant and equipment to be installed on the development.

Cumulative Assessment Methodology

11.3.54 The cumulative assessment is undertaken with the development as this represents the worst case situation.

11.4 Significance Criteria

Sensitivity of Receptor

- 11.4.1 Receptors have been classified according to their use and associated sensitivity to noise and vibration. The criteria defined and adopted for classification purposes are set out in Table 11.12.

Sensitivity	Description	Examples of receptors
High	Receptors where occupants or activities are particularly susceptible to noise	<ul style="list-style-type: none"> • Residential • Schools/Education facilities • Hospitals/residential care homes • Religious institutions e.g. churches or mosques
Medium	Receptors moderately sensitive to noise, where it may cause some distraction or disturbance	<ul style="list-style-type: none"> • Offices • Restaurants • Shops • Leisure Centre
Low	Receptors where distraction or disturbance from noise is minimal	<ul style="list-style-type: none"> • Factories and workshop environments during the daytime

Table 11.12 Criteria to Define the Sensitivity of Receptors.

Nature and Duration of Effect

- 11.4.2 The following terminology has been used to define noise and vibration nature of the effect:
- Beneficial – advantageous or positive effects to an environmental resource or receptor;
 - Adverse – detrimental or negative effects to an environmental resource or receptor.
- 11.4.3 The duration of noise and vibration effects is defined as follows:
- Temporary – short term (lasting up to 1 month), or, medium term (lasting over 1 month).
 - Permanent – long term by definition.

Magnitude of Impact Scale

- 11.4.4 Where noise and vibration impacts have been identified, the magnitude is described using the following semantic scale:
- Very Low – slight (or no) change in level, often imperceptible,
 - Low – slight change in level, generally lowest noticeable change, unlikely to lead to more than moderate effect.
 - Medium – a moderate change in level, and could lead to moderate or major effect depending on the receptor.

- High – a relatively large change in level, and likely to give rise to major effect.

Definition of Resultant Effects and Significance

- 11.4.5 Table 11.13 provides a matrix showing the adopted resultant effects categories depending on the determined magnitude of impact and the sensitivity of the receptor.

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

Table 11.13 Classification of Resultant Effects Matrix.

- 11.4.6 Generally ‘moderate’ or ‘major’ permanent resultant effects are deemed to be ‘significant’, whereas ‘minor’ permanent resultant effects are deemed to be ‘not significant’, although they may be a matter of local concern. ‘Negligible’ permanent resultant effects are deemed to be ‘not significant’ and not a matter of local concern.
- 11.4.7 ‘Moderate’ short term temporary effects are deemed to be ‘not significant’, due to the effect having no long term (permanent) environmental impact; although the resultant effects may be a matter of local concern during the period of the activities, particularly when the magnitude of impact is ‘high’.

11.5 Legislation, Planning Policy and Guidance

Planning Policy and Guidance

National Planning Policy

Control of Pollution Act (1974)

- 11.5.1 Section 60 of the Control of Pollution Act 1974 (CPA) provides legislation regarding the ability of local authorities to impose requirements on the way demolition and construction works are to be undertaken.
- 11.5.2 In addition, CPA requires that the local authority shall have regard to the need for ensuring the “best practicable means” are adopted to control construction noise on any given site. These means include “the design, installation, maintenance and manner and periods of operation of plant and machinery, and the design of construction and maintenance of buildings and acoustic structures”.
- 11.5.3 Section 61 of CPA is a provision for the means under which a person who intends to carry out demolition and construction works may apply to the local authority for consent to undertake the work.

Environmental Protection Act (1990)

- 11.5.4 The Environmental Protection Act (1990) (EPA) determines that “noise emitted from premises so as to be prejudicial to health or a nuisance” constitutes a statutory nuisance for the purposes of the act.
- 11.5.5 It is the duty of every local authority to take steps as is reasonably practicable to investigate public complaints of noise. If the local authority is satisfied that a statutory nuisance exists, or is likely to occur or recur, a noise abatement notice must be served on the person responsible for the nuisance. This would require the abatement of the nuisance, or works to abate the nuisance to be carried out, or the prohibition of the activity. Contravention of a notice without reasonable excuse is an offence.
- 11.5.6 In determining if a noise complaint amounts to a statutory nuisance, the Local Authority can take account of existing guidance and case law as there are no statutory noise limits. Demonstrating the use of best practicable means is a defence against a noise abatement notice.
- 11.5.7 Noise, for the purposes of this act, includes vibration.

National Policy and Planning Guidance

National Planning Policy Framework (2024)

- 11.5.8 The National Planning Policy Framework (NPPF) outlines the Government’s environmental, economic and social policies for England and how these are expected to be applied. It sets out the government’s requirements for the planning system by providing a framework within which local authorities can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities.
- 11.5.9 The National Planning Policy Framework states that the planning system should contribute to and enhance the natural and local environment by “preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability”. Furthermore, it states that planning policies and decisions should aim to:
- avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
 - mitigate and reduce to a minimum other adverse impacts on health and quality of life as a result of new development;
 - recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established;
 - identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

Noise Policy Statement for England (2010)

- 11.5.10 The Noise Policy Statement for England (2010) (NPSE) sets out the government's long term noise policy, to "promote good health and a good quality of life through the effective management of noise within the context of policy on sustainable development".
- 11.5.11 NPSE also states: "*Excessive noise can have wide-ranging impacts on the quality of human life, health (for example owing to annoyance or sleep disturbance) and use and enjoyment of areas of value such as quiet places and areas with high landscape quality.*"
- 11.5.12 In addition, NPSE cites, in the Explanatory Notes section, the following supporting aims:
- Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Governmental policy on sustainable development;
 - Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development; and
 - Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
- 11.5.13 The explanatory note also introduces guidance to assist in defining the adverse impacts:
- No Observed Effect Level (NOEL) – the level below which no effect can be detected. Below this level, no detectable effect on health and quality of life due to noise can be established;
 - Lowest Observed Adverse Effect Level (LOAEL) – the level above which adverse effects on health and quality of life can be detected; and
 - Significant Observed Adverse Effect Level (SOAEL) – the level above which significant adverse effects on health and quality of life occur.
- 11.5.14 NPSE acknowledges that it is not possible to have a single objective noise-based measure that defines these criteria that is applicable in all situations and for all noise sources, receptors and times.

National Planning Practice Guidance (2018)

- 11.5.15 The National Planning Practice Guidance (2018) (PPG) is a web-based resource that replaced previous planning guidance, and supports the National Planning Policy Framework, providing clarity on the practical application of the policy.
- 11.5.16 The PPG advises that noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. It also

acknowledges that neither the NPE nor the NPPF expects noise to be considered in isolation, separately from the economic, social and other environmental dimensions of the Proposed Development.

11.5.17 The PPG also outlines considerations for local authorities as part of the planning process:

- whether or not a significant adverse effect is occurring or likely to occur;
- whether or not an adverse effect is occurring or likely to occur;
- whether or not a good standard of amenity can be achieved.

Environmental Noise (England) Regulations (2006, as amended)

11.5.18 The Environmental Noise (England) Regulations transpose the provisions of the EC Directive 2002/49/EC in relation to measures relating to the assessment, management and control of environmental noise. The regulations cover the identification of noise sources, requirements for strategic noise maps, the identification of quiet areas, and the drawing up and implementation of action plans, and the publication and availability of this information.

Regional Planning Policy

11.5.19 West Suffolk Council requires a noise assessment as part of planning applications for developments that may generate noise, particularly those near sensitive areas or existing noise sources. This is crucial to ensure that new developments don't negatively impact the environment and residents.

Anticipated Planning Conditions

Internal Noise Conditions

11.5.20 Meeting BS 8233 internal noise conditions in residential dwellings is expected to be required. It is possible that the ProPG (2017; see below) defined 45 dB L_{AFmax} night time limit for individual noise events may also be included.

Plant Noise

11.5.21 We understand that plant noise limits defined by the West Suffolk Council typically require total plant noise rating levels to not exceed 5 dB below the measured representative L_{A90} (background sound level) at the noise sensitive receptors.

11.5.22 It is assumed that that vibration levels conditioned by the West Suffolk Council typically require the following criteria:

- Internal vibration levels shall not exceed the category of “low probability of adverse comment” (as defined in Table 1 of BS 6472-1:2008).

- Groundborne noise shall not exceed 40 dB $L_{Amax,slow}$ as measured in the centre of any residential room.

11.5.23 The first condition above references Table 1 of BS 6472-1:2008 'Guide to evaluation of human exposure to vibration in buildings Part 1: Vibration sources other than blasting'. Thus the condition implies VDV (vibration dose value) limits of 0.4 m s^{-1.75} (day) and 0.2 m s^{-1.75} (night).

Other Guidance, Policy and Standards

World Health Organization Guidelines for Community Noise (1999)

11.5.24 The 'World Health Organization Guidelines for Community Noise' sets out guideline limits for noise in specific environments. These form the basis for the BS 8233 Indoor Ambient Noise Levels, which are for continuous anonymous noise. In addition to this, there is also a guideline upper level for single sound events inside bedrooms at night of 45 dB L_{AFmax} .

British Standard 8233(2014)

11.5.25 BS 8233:2014 – Guidance on sound insulation and noise reduction for buildings (BS 8233) provides guidance on internal ambient noise levels, resulting from break-in of external environmental noise that should not be exceeded in various locations within dwellings.

11.5.26 In addition, BS 8233 provides guidance on desirable noise levels in areas that are intended to be used for external amenity space.

British Standard 5228 – Part 1 and Part 2 (2009)

11.5.27 BS 5228:2009 – Code of practice for noise and vibration control on construction and open sites – Part 1: Noise ; Part 2: Vibration (BS 5228-1 and BS 5228-2) provides a method for calculating noise produced by construction and open sites, such as quarries. This includes noise from both stationary and mobile plant. The standard includes data for different types of noise sources that might typically be found on a construction or open site. Part 1 relates to noise, Part 2 to vibration.

Advisory Leaflet AL72 – Noise Control on Building Sites, 1976

11.5.28 Department of the Environment (now the Department for the Environment, Food and Rural Affairs (Defra)) Advisory Leaflet AL72 contains criteria for recommended daytime façade noise levels for noise from construction at nearby noise sensitive receptors.

British Standard BS 6472-1 (2008)

11.5.29 BS 6472-1:2008 – Guide to evaluation of human exposure to vibration in buildings. Part 1: Vibration sources other than blasting (BS 6472) provides an assessment method for exposure to continuous

vibration in residential buildings. The assessment is made by evaluating the probability of adverse comment in relation to a measured vibration dose value (VDV).

British Standard 4142 (2014)

- 11.5.30 BS 4142:2014 Method for rating and assessing industrial and commercial sound (BS 4142) is a widely accepted method for assessment of the impact of noise from plant equipment.
- 11.5.31 The plant noise level (corrected to account for characteristics such as tonality or intermittency) is compared to the representative background sound level without the noise source operating. The difference between the corrected plant noise level and the background sound level determines the significance of impact of the noise under assessment.
- 11.5.32 Typically, the greater this difference the greater the magnitude of impact. The lower the rating level, relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact.

British Standard 7445 (1991)

- 11.5.33 BS 7445 (1991) – Description and Measurement of Environmental Noise provides material for the description of noise in community environments. Based on the principles of this standard, acceptable limits of noise can be specified and compliance can be controlled. The standard covers instrumentation, measurement procedure, data collection, and the application of noise limits.

NANR45 – Criteria Revision 1 December 2011

- 11.5.34 NANR45 – Criteria Revision 1 December 2011 NANR45 – ‘Proposed criteria for the assessment of low frequency noise disturbance’ recommends a method for assessing low frequency noise (LFN), suitable for use by Environmental Health Officers (EHOs) in the UK.

IEMA Guidelines for Environmental Noise Impact Assessment (2014)

- 11.5.35 The IEMA Guidelines for Environmental Noise Impact Assessment provide a resource to assist in the assessment of the impact of potential new noise sources. The guidelines include advice on the various factors that should be considered, as well as example significance criteria for noise impacts based on changes in noise levels.

Calculation of Road Traffic Noise (1998)

- 11.5.36 The Calculation of Road Traffic Noise (CRTN) method as produced by the Department of Transport (Welsh Office), 1998, describes how to predict the noise level from a road segment based on traffic flow, percentage heavy vehicles, traffic speed, road gradient and road surface. This method is suitable for environmental assessments of schemes where road noise may have an effect, or where changes in traffic flow are being assessed.

Design Manual for Roads and Bridges (2011)

- 11.5.37 The Design Manual for Roads and Bridges” Volume 11 Section 3, Part 7 – “Environmental Assessment Techniques – Noise and Vibration” (DMRB) provides a method for the assessment of impacts from new road projects. The method is appropriate for assessing the effects of new construction, improvements and maintenance, as well as operation.
- 11.5.38 The magnitude of the impact of a road project at any location can be reported in terms of changes in absolute noise level. The magnitude of the impact criteria are often used as part of an assessment that utilises CRTN traffic flow calculations.
- 11.5.39 The DMRB provides methodology for assessing the effect of changes in noise level from traffic flows over both the short term (upon opening) and the long term (in the 15th year). The short term criteria are more sensitive to changes in noise level.

ProPG (2017)

- 11.5.40 ProPG: Planning and Noise: Professional Practice Guidance on Planning & Noise – New Residential Development 2017 (ProPG), provides guidance on a recommended approach to the management of noise within the planning system in England. The guidance includes advice on noise risk assessments as well as design guidance for internal noise levels and noise levels in external amenity areas, and assessments of other relevant issues.

11.6 Baseline Conditions

Baseline Conditions

- 11.6.1 To characterise the existing noise environment, it is necessary to establish the environmental conditions, noise sources and receptors that currently exist at the site of the Proposed Development or in the surrounding area.

Baseline Noise Levels

- 11.6.2 Summary of baseline noise measurements results are provided in Table 11.13 and Table 11.14. Details of the noise surveys are provided in Appendix 11.1 Noise and Vibration.
- 11.6.3 Table 11.14 presents background noise levels measured during long term surveys at MP1 and MP2 (see Figure 11.1). These locations were selected for the calculation of background noise levels as these are located further away from the main road (B1506) than MP3, therefore being representative of the quieter areas of the site. This constitutes a worst case scenario when specifying, for example, maximum noise levels allowed to be generated by plant equipment (as these are dependent on background noise levels).

Measurement Location	L _{A90,16hr} dB Day time (7am – 11pm)	L _{A90,8hr} dB Night time (11pm – 7am)
MP1 / MP2	40.1	34.0

Table 11.14 Summary of background measured noise levels at MP1 / MP2 showing mean, representative background (40th percentile, LA90,15min data).

- 11.6.4 Table 11.15 sets out average and maximum noise levels measured during the long term traffic noise survey at MP3. This location is directly exposed to traffic on B1506, which is the dominant traffic noise source affecting the proposed development.

Measurement Location	L _{Aeq,16hr} dB Day time (7am – 11pm)	L _{Aeq,8hr} dB Night time (11pm – 7am)	L _{AFmax,8hr} dB Night time (11pm – 7am)
MP3 – The Stables	54.4	50.4	64.9

Table 11.15 Summary of measured noise levels at MP3 - The Stables, with mean and maximum noise levels presented.

- 11.6.5 The measurement results were used to build a 3D software model to represent the baseline noise conditions. Figure 11.2 present a noise map for the daytime periods for the baseline noise model. Further details are provided in Appendix 11.1 Noise and Vibration.

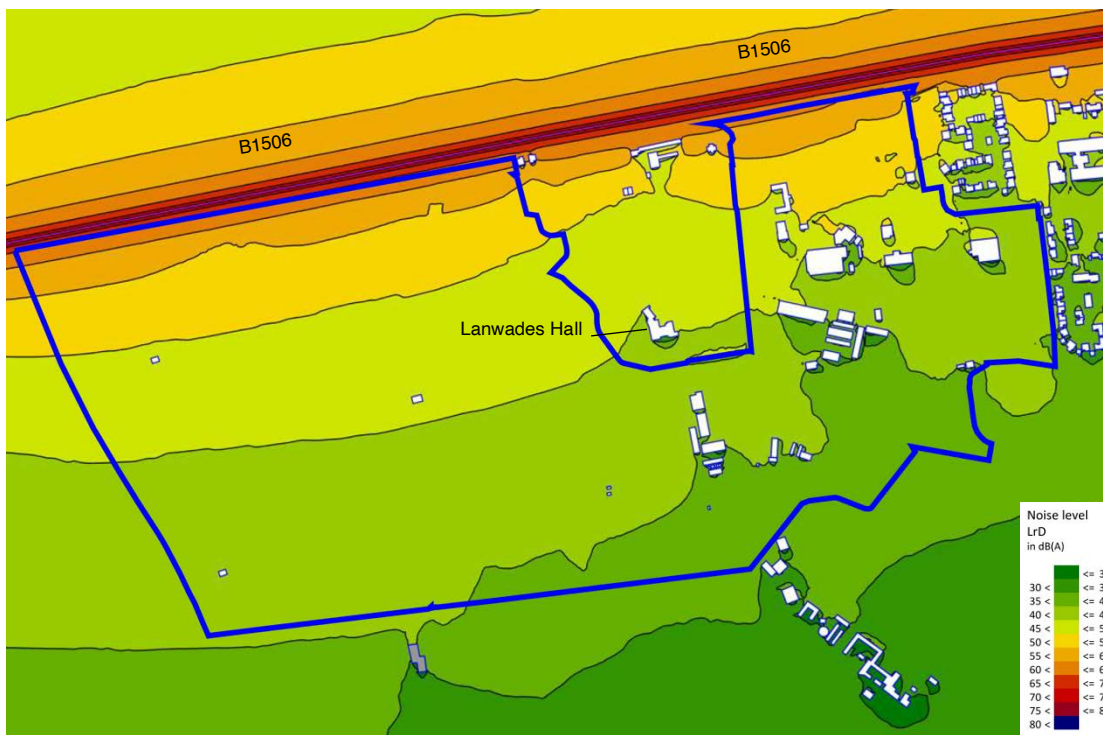


Figure 11.2 Day time (07:00-23:00) noise map of baseline levels (LAeq,16hr) calculated 1.5 m above the. Site boundary is indicated by a blue line.

11.7 Receptors and Receptors Sensitivity

11.7.1 Noise Sensitive Receivers (NSRs) most likely to be affected by noise related to demolition, construction and operational road traffic are shown in Table 11.16 and Figure 11.3.

NSR Reference	Location	Building Type	Sensitivity
NSR1	Lanwades Hall	Wedding Events / Residential	High
NSR2	East & West Lodges	Residential	High
NSR3	Gardener Cottage	Residential	High
NSR4	Chipenham Hill	Residential	High
NSR5	Lanwades Stud	Commercial /Residential	High
NSR6	Beyerley Cl.	Residential	High
NSR7	Farrier Mews1	Residential	High
NSR8	Farrier Mews2	Residential	High
NSR9	Jeddah Way1	Residential	High
NSR10	Jeddah Way2	Residential	High
NSR11	Jeddah Way3	Residential	High
NSR12	Off Moulton Rd	Residential	High

Table 11.16 Selected Noise Sensitive Receivers (NSR) for Demolition, Construction and traffic noise (Construction. + Operational).



Figure 11.3 Figure showing location of Noise Sensitive Receivers for Demolition, Construction and Traffic Noise (Construction + Operational).

11.8 Potential Environmental Impacts and Effects

Demolition and Construction

Demolition and Construction Noise

- 11.8.1 The predicted, unmitigated noise levels at the identified receptors during the demolition and construction programme are presented in Table 11.17.

NSR	1	2	3	4	5	6	7	8	9	10	11	12
	Noise Level at Receptor (dB L _{Aeq,10hr}) (Noise Level Relative to Significance Threshold (dB))											
Demol	68.1 (3.1)	60.3 (-4.7)	62.9 (-2.1)	53.9 (-11.1)	66.1 (1.1)	66.6 (1.6)	72.4 (7.4)	70.6 (5.6)	69.3 (4.3)	68.5 (3.5)	61.7 (6.7)	58.5 (3.5)
Constr	65.3 (0.3)	56.7 (-8.3)	61.2 (-3.8)	53.1 (-11.9)	65.1 (0.1)	68.2 (3.2)	69.5 (4.5)	70.8 (5.8)	72.4 (7.4)	70.6 (5.6)	63.7 (-1.3)	57.2 (-7.8)

Table 11.17 Predicted Demolition and Construction Noise Levels at Noise Sensitive Receptors.

- 11.8.2 Table 11.17 also shows (in parentheses) the exceedance over the Significance Threshold, defined as the BS 5228-1 'ABC' method threshold for residential receivers, and the 5dB(A) method for non-residential receivers (which, in this case, results in 65 dBA LAeq for both methods). The Noise Sensitive Receivers referenced in this section are those shown in Table 11.15 (and Figure 11.3).
- 11.8.3 The resultant effect for demolition and construction at each existing sensitive receptor (NSR) is provided in Table 11.18. The likely effect is determined by applying the magnitude of impact and receptor sensitivity to the effect matrix criteria displayed in Table 11.13.

NSR	1	2	3	4	5	6	7	8	9	10	11	12
	Resultant Effect											
Demol	Mod.	Minor	Minor	Neg.	Mod.	Mod.	Mod.	Mod.	Mod.	Mod.	Mod.	Mod.
Const	Mod.	Neg.	Minor	Neg.	Mod.	Mod.	Mod.	Mod.	Mod.	Mod.	Min.	Neg.

Table 11.18 Predicted resultant effect for demolition and construction at each existing sensitive receptor (NSR).

- 11.8.4 If left unmitigated, moderate adverse effects may be experienced at all NSRs except NSR2, NSR3 and NSR4.
- 11.8.5 As the resultant effects are moderate adverse for a number of receptors, all reasonable steps will be taken to mitigate and minimise the effects through the adoption of Best Practicable Means (BPM). Noise mitigation measures and noise management plans will be put in place to ensure that demolition noise is

minimised at all times. Noise mitigation measures representing BPM (as defined in section 72 of CPA) are described in the Mitigation section.

- 11.8.6 Where the predicted noise from construction is >70 dB $L_{Aeq,10hr}$, as is the case for NSR7, NSR8, NSR9, NSR10, AL72 advises additional local mitigation measures should be applied, such as local barriers or time management methods to reduce levels to below the 70 dBA threshold. This is considered achievable in principle, as the 70 dB $L_{Aeq,10hr}$ criterion is not exceeded by more than 2.4 dBA at any of the four Noise-Sensitive Receptors (NSRs).

Construction Traffic

- 11.8.7 Estimated numbers of “heavy” and “light” vehicles (provided by Lochailort Kentford Ltd). concerning demolition and construction traffic are indicated in Table 11.19.

	Two-way Daily Light Vehicle Movement	Two-way Daily Heavy Vehicle Movement
Demolition	4	28
Construction	160	56

Table 11.19 Demolition and Construction Traffic Noise Resultant Effects at Noise Sensitive Receptors.

- 11.8.8 As a detailed construction traffic program is not yet available a simplified assessment has been undertaken. It assesses the impact at NSR2 (East and West Lodges), which is directly exposed to traffic on BS1506. Furthermore, it assumes that the demolition and construction traffic indicated in Table 11.19 will travel through the BS1506 section located in front of NSR2 (Figure 11.2). It also assumes that demolition and construction traffic is constant through the demolition and construction phases.
- 11.8.9 The predicted levels of traffic noise generated by the addition of the construction traffic to the 2024 Baseline can be seen in Table 11.20, alongside the level relative to the 2024 Baseline alone.

	$L_{Aeq,10h}$ (noise level relative to 2024 baseline)
Demolition	67.1 (0.1)
Construction	67.3 (0.2)

Table 11.20 Predicted levels at NSR2 of traffic noise generated by the addition of the construction traffic to the 2024 Baseline.

- 11.8.10 Table 11.21 shows the resultant effects of this impact, relative to the baseline.

	Significance
Demolition	Negligible
Construction	Negligible

Table 11.21 Construction Traffic Noise Resultant Effects at NSR 2.

- 11.8.11 As can be concluded from Table 11.20 and Table 11.21 the resultant effects at NSR2 are negligible. Thus, the environmental effect is considered not significant at this receptor.

Construction Vibration

- 11.8.12 It is assumed that the piling methodology for the Proposed Development will predominantly be continuous flight auger piling.
- 11.8.13 BS 5228-2 presents over 35 cases of different types of piling and PPV measurements which can give a reasonable overview of what upper limit PPV values can be expected. See Appendix 11.1 Noise and Vibration for details. PPV values of no more than 1.0mm s⁻¹ can be expected when piling occurs at 20m or more, and when distances are between 5-20m PPV values of 1.0- 2.0mm s⁻¹ could be expected.
- 11.8.14 It is expected that vibration experienced as a result of auger piling would result in a low or very low magnitude of impact for the large majority of receptors, and no more than medium magnitude of impact for receptors within 20m from the proposed activity. The individual vibration-inducing activities (i.e. drilling for a pile) are all short term temporary in nature.

Operation

Traffic Noise Assessment – Completed Development

- 11.8.15 The assessed scenarios are shown in Appendix 11.1 Noise and Vibration.
- 11.8.16 It is concluded that the resultant effect of changes to traffic due to the development, is at worst minor adverse. The overall environmental effect is not significant.

Fixed Plant and Building Services – Completed Development

- 11.8.17 The combined total plant noise perceived at any existing noise sensitive property in, or in the vicinity of, the site, will be designed to meet a noise rating level ($L_{Aeq,r}$) that is at least 5 dB below the representative background sound level, where the representative background sound level is defined by the methodology of BS 4142:2014.
- 11.8.18 Table 11.22 shows the representative background sound levels for the day and night periods (based on the noise survey results reported in Table 11.15) and thus the upper limit plant noise rating limit, which is set at 5 dB below the background sound level (i.e. the anticipated planning condition). This plant noise represents the total combined specific noise level from all plant equipment with any acoustic feature corrections applied to provide the combined plant noise rating level.

Period	Representative Background Sound Level (dB L_{A90})	Plant Noise Rating Upper Limit at Nearby Noise Sensitive Receptors (dB $L_{Aeq,r}$)
Daytime (07:00-19:00)	40	35
Night-time (23:00-07:00)	34	29

Table 11.22 Representative background sound levels (L_{A90}) and adopted plant noise rating limits ($L_{Aeq,r}$).

- 11.8.19 As part of this methodology, an acoustic feature correction will be applied to the plant specific sound level should it become apparent at more detailed stages of design that the noise from these sources may contain characteristics such as tonality, intermittency, etc..
- 11.8.20 The specific items of plant equipment to be installed at the proposed development have not yet been specified. However, since the rating noise level at the NSRs for the combined plant equipment is 5 dB below the background noise, the impact magnitude is considered to be 'very low' (refer to Table 11.11).
- 11.8.21 It follows that the resultant effect of the installation of mechanical equipment at the Proposed Development, is therefore Negligible. The overall environmental effect is not significant.

11.9 Assessment of the Suitability of the Site for the Development

Indoor Ambient Noise Levels – Residential Units

Traffic Noise

- 11.9.1 In order to achieve the BS 8233 internal ambient noise levels noted in Table 11.2 (relative to environmental noise) the façade including any ventilation openings must provide an adequate level of sound insulation under background ventilation conditions, as discussed below.

Lanwades Hall Events Noise

- 11.9.2 In order to achieve the internal ambient noise levels targets indicated in Table 11.3 (relative to Lanwades Hall Events Noise) the façade, including any ventilation openings, must provide an adequate level of sound insulation under background ventilation conditions, as discussed below.
- 11.9.3 It should be noted that active cooling (ASHP) is planned to be installed at each residential unit. This will provide flexibility to keep windows closed, should the residents wish to do so.

Façade Noise Levels

Traffic Noise

- 11.9.4 The noise mapping exercise that was undertaken enables the prediction of external noise levels at the facades of the proposed buildings. A prediction of the general day time noise levels of the final completed

Proposed Development, including general environmental noise (traffic etc.) can be found in Appendix 11.1 Noise and Vibration.

Lanwades Hall Events Noise

- 11.9.5 Music noise levels (during wedding events at Lanwades Hall) have been measured at MP1 and MP2 (see Figure 11.1 and Table 11.1) during a long term survey (13/05/2024 to 17/10/2024).
- 11.9.6 Table 11.23 presents spectral noise levels measured at MP2 at ten wedding events at Lanwades Hall. Each row presents spectral noise levels corresponding to the 3 minute period where 63Hz 1/1 octave band noise level was the highest for the whole event. 63 Hz octave band was chosen as it is usually the most onerous octave band to provide adequate façade sound insulation.
- 11.9.7 Table 11.23 also presents LAeq, LCeq corresponding to the above mentioned 3 min period. Refer to Appendix 11.1 Noise and Vibration for the full time history of each of these events and for predicted noise levels at external amenity spaces.

MP2 measurements Date (time)	dB, Leq 1/1 octave band						dB LAeq	dB LCeq
	63 Hz	125Hz	250Hz	500Hz	1KHz	2KHz		
18/05/24 (21:07h)	64.2	56.2	42.7	46	45.5	37.9	49.1	63.9
30/05/24 (14:19h)	55.8	50.4	45.6	50	47.8	37.1	50.9	60.6
01/06/24 (18:45h)	53.9	47.7	47.2	49.9	47.4	45.2	52.3	58.9
08/06/24 (19:15h)	61.9	59.3	49.5	51.5	51.9	49.6	56.0	65.6
14/06/24 (13:39h)	54	59.8	51.5	48.4	50.6	49.9	56.5	62.0
15/06/24 (18:18h)	53.2	45.7	40.9	43.1	43.1	37.1	46.3	57.6
22/06/24 (20:54h)	63.7	55.5	41.8	43.4	43.9	39	48.4	62.4
29/06/24 (16:57h)	56.3	53.6	51.8	49.3	43.7	36.6	49.9	61.5
19/07/24 (21:07h)	66.6	65.2	50.4	48.8	48.8	43	53.9	68.0
18/05/24 (21:07h)	64.2	56.2	42.7	46	45.5	37.9	53.9	68.0

Table 11.23 Frequency content of noise levels measured at MP2 during ten wedding events at Lanwades Hall. The values presented above correspond to the 3 min interval with the highest measured level at 63Hz.

Facade Acoustic Insulation

Traffic Noise

- 11.9.8 Highest noise levels will be felt at the residential units planned to be built nearer to B1506. At these locations glazing with a sound reduction performance of 29 dB Rw+ Ctr is deemed sufficient to meet internal noise level targets, as generated by traffic noise. A performance of 29 dB Rw+ Ctr can normally be achieved by standard double glazing units, such as 8mm float glass / 12mm gap / 6mm float glass.
- 11.9.9 Buildings to be built further away from B1506 will be exposed to lower traffic noise levels, and therefore the above glazing performance will also allow meeting internal noise level targets (generated by traffic noise). Overall, the anticipated glazing and ventilation design is not considered onerous.

Lanwades Hall Events Noise

- 11.9.10 Highest noise levels will be felt at the residential units planned to be built nearer to Lanwades Hall. Glazing with a sound reduction performance of 26 dB R at 63 Hz and 25 dB R at 125 Hz is deemed sufficient to meet internal low frequency noise level targets at these frequencies (see Table 11.3). This insulation performance can in principle be achieved, by 6mm float glass / 10mm gap / 8.8mm laminated glass, with an overall rating of 34 dB Rw+Ctr.
- 11.9.11 Therefore, to accommodate the requirements associated with both traffic noise and with Lanwades Hall events different parts of the site will have installed glazing with different sound reduction performance.
- 11.9.12 Glazing with higher performance (34 dB Rw+Ctr) will be installed on residential units located nearer to Lanwades Hall whereas the rest of the development will have installed more standard glazing (29 dB Rw+Ctr). This is illustrated in Figure 11.4.
- 11.9.13 It should be noted that active cooling (ASHP) is planned to be installed at each residential unit which will provide flexibility to keep windows closed, should the residents wish to do so.



Assessment of Site Suitability

Figure 11.4 Indicative location of residential buildings that will have installed higher performance glazing units (34 dB Rw+Ctr) - red line. The rest of the development will have 29 dB Rw+Ctr glazing installed.

- 11.9.14 The site is considered suitable for the introduction of residential buildings.

External Amenity Area

Traffic Noise

- 11.9.15 Noise levels at the external amenity spaces of the residential units proposed to be built are predicted not to exceed 50 dB LAeq.

Lanwades Events Noise

- 11.9.16 Noise levels at the external amenity spaces of the residential units proposed to be built nearest to Lanwades Hall, are predicted not to exceed 55 dB LAeq. These decrease significantly for the residential units located further away due to both distance attenuation and occlusion caused by buildings.

Assessment of Site Suitability

- 11.9.17 The noise conditions for external amenity space serving the development are considered acceptable, and thus the site is considered suitable for the development.

11.10 Additional Mitigation, Compensation and Enhancement Measures

Demolition and Construction

- 11.10.1 The assessment of potential construction noise and vibration does not, in general, include prescriptive measures for mitigating noise, as the method and programme of construction at the current design stage is not sufficiently developed.
- 11.10.2 The LPA would expect that, in accordance with Section 60 of COPA, best practicable means are employed to minimise noise. The means to be employed include the design, installation, maintenance and manner and periods of operation of plant and machinery and the design, construction and maintenance of buildings.
- 11.10.3 Measures taken to mitigate potential noise and vibration effects on nearby noise sensitive receptors will be documented in a Construction Environmental Management Plan (CEMP).
- 11.10.4 The mitigation measures will be reviewed at the detailed demolition and construction planning stage, to ensure that the mitigation measures and management controls and/or procedures adopted as part of the CEMP are sufficient to meet the commitments made throughout the assessments.

11.10.5 BS 5228 provides general guidance on mitigating noise from construction sites, which are to be included in the CEMP. Mitigation measures will include (but not be limited to):

- Appropriate hours of work will be defined and adhered to;
- Adoption of appropriate noise control targets and monitoring where required;
- Site layout will be planned – where possible machinery will be located away from sensitive receptors;
- Use of hoarding. Erecting hoarding around the perimeter of the active demolition or construction sites will assist in the screening of low-level sources;
- Use of enclosures around equipment as appropriate;
- Hydraulic construction to be used in preference to impact techniques where practical;
- Use of low impact techniques, such as demolition munchers and bored or hydraulically jacked piling rigs;
- All plant and equipment to be used for the works will be modern, quiet and properly maintained, silenced where appropriate, operated to prevent excessive noise, and switched off when not in use and where practicable. All equipment will comply with the EC Directives and UK Regulations set out in BS 5228;
- Plant will be certified to meet relevant current legislation and standards;
- All trade contractors will be required to demonstrate familiarisation with current noise legislation and standards, such as BS 5228 which will form a prerequisite of their appointment;
- Loading and unloading of vehicles, dismantling of equipment (such as scaffolding), or moving equipment or materials around site will be conducted in such a manner as to minimise noise generation and, where practical, will be conducted away from noise sensitive areas;
- Careful handling of materials and waste, such as lowering rather than dropping items;
- Avoidance of unnecessary noise (such as engines idling between operations, shouting, loud radios or excessive revving of engines) by effective site management;
- Permission for deviation from approved method statements, only with prior approval from the Principal Contractor and other relevant parties. This will be facilitated by formal review before any deviation is undertaken;
- Adoption of appropriate noise control targets and monitoring where required; and
- Complaints about noise, or incidences where target levels are exceeded, will be reported to the Principal Contractor and immediately investigated.

11.10.6 With the various mitigation measures, the construction and demolition noise levels are expected to be controlled to below 70 dB ($L_{Aeq,10h}$) at all sensitive receptors and as such represent no more than a

medium magnitude of impact, and thus a **negligible to moderate adverse** residual effect. As these activities are temporary, but medium term in what regards construction (demolition is expected to last approximately six weeks), the environmental impact is considered significant.

11.10.7 Vibration mitigation measures will include (but not be limited to):

- Work will be undertaken with due regard to guidance provided in BS 5228-2;
- Continuous flight auger piling will be used in preference to impact techniques where practical;
- Times of vibration inducing activity (e.g. piling) is managed;
- A 'Piling Method Statement' will be provided and agreed prior to the commencement. The statement will include any agreed vibration and noise monitoring and action levels;
- Local residents will be kept informed;
- Complaints about vibration will be reported to the Principal Contractor and immediately investigated.

11.10.8 The vibration-inducing activities of demolition and construction represent a **negligible to minor adverse** residual effect for the majority of receptors, and thus considered not significant.

11.10.9 Where distances from piling locations are less than 20m, a **moderate adverse** residual effect could result. However, the duration of these activities (i.e. the closest piles) giving rise to these effects are short term in nature (i.e. hours/days). As such, the effects are considered not significant.

11.10.10 Mitigation measures applied to construction traffic will include (but not be limited to):

- Vehicles employed for activity related to the construction works will, where reasonably practicable, be fitted with exhaust silencers and will be maintained in good working order and operated in a manner such that noise emissions are minimised as far as is reasonable possible; and
- Time slots will be allocated for deliveries to ensure that convoys of vehicles do not arrive simultaneously, and avoid unnecessary idling on site;
- All vehicles will switch off engines – no idling vehicles;
- Movement of construction traffic around site will be minimised; and
- Appropriate speed limit around site will be enforced.

11.10.11 The construction traffic noise represents no more than a **negligible adverse** residual effect. The effects are temporary and the long term environmental impact is considered not significant. It should be noted that, in the absence of a detailed demolition and construction traffic plan at this stage, the assessment was limited to one NSR.

Operation

11.10.12 The changes in operational traffic associated with the Development give rise to residual effects ranging between **negligible and minor adverse**. The long term environmental impact is considered not significant.

11.10.13 The noise emission from fixed plant associated with the Development represents residual effects of **negligible adverse**. The long term environmental impact is considered not significant.

11.11 Assessment Summary and Residual Environmental impacts and Effects

Assessment Summary

11.11.1 Table 11.24 summarises the residual effects, including scale and nature of other classification indicators.

Receptor (Sensitivity)	Description of Residual Effect	Classification of Residual Effect*					
		Scale and Nature**	+ -	D I	P T	R IR	St Mt Lt
Demolition and Construction							
Residential dwellings (high)	Construction and demolition noise	Negligible to Moderate Adverse	-	D	T	R	Mt
Residential dwellings (high)	Construction and demolition vibration	Negligible to Moderate Adverse	-	D	T	R	St
Residential dwellings (high)	Construction and demolition traffic noise	Negligible Adverse	-	D	T	R	Mt
Completed Development							
Residential dwellings (high)	Traffic noise	Negligible Adverse to Minor Adverse	-	D	P	IR	Lt
Residential dwellings (high)	Fixed plant noise emissions	Negligible Adverse	-	D	P	IR	Lt
Notes: * - = Adverse/ + = Beneficial; D = Direct/ I = Indirect; P = Permanent/ T = Temporary; R=Reversible/ IR= Irreversible; St- Short term/ Mt -Medium term/ Lt -Long term; **Nature = Beneficial or Adverse; Scale = Negligible/ Minor / Moderate/ Major							

Table 11.24 Summary of Residual Effects.

Site Suitability

Indoor Ambient Noise Levels

11.11.2 Facades, glazing and ventilation strategies for the residential elements of the Proposed Development are to be designed in order to meet appropriate indoor ambient noise level standards (regarding both traffic

noise and Lanwades events noise). The planned installation of active cooling (ASHP) at each residential unit provides flexibility to keep windows closed, should the residents wish to do so.

- 11.11.3 The site is considered suitable for providing acceptable indoor ambient noise levels.

External Amenity Areas

- 11.11.4 External amenity spaces will be introduced within the site of the Proposed Development, mainly associated with each residential unit. External noise levels at these spaces, associated with traffic noise, can be expected to be below 50 dB LAeq.
- 11.11.5 The external amenity spaces associated with residential units planned to be build nearest to Lanwades Hall (located to the south of Lanwades Hall - see Figure 11.5) are expected not to exceed 55 dB LAeq. Generally, levels will be below 50 dB LAeq throughout Lanwades events (see 11.1: Noise and Vibration for further details) and significantly decrease for external amenity spaces located further away from Lanwades Hall.
- 11.11.6 The site is therefore considered suitable for providing relatively quiet external amenity space.

Significant Residual Effects

- 11.11.7 The residual effect from construction noise was found to be significant as, although the duration of the moderate adverse residual effects are temporary, they cannot be considered short term due to the length of the construction programme.
- 11.11.8 This should be considered in the following context. The magnitude of impact assessment was undertaken assuming that construction work is simultaneously active at all plots, each with the totality of the equipment in operation during both demolition and construction (which are assumed to take place one after the other). This is the worst-case situation and no receptors are expected to experience moderate adverse residual effects for the entire construction programme.
- 11.11.9 Furthermore, the worst case (noisiest) construction and demolition activities are not expected to occur throughout the entire duration of each assessment period.

11.12 Cumulative Development

Cumulative Effects Once the Proposed Development is Completed and Operational

- 11.12.1 The traffic noise assessment included the cumulative effects of other proposed schemes, which is the worst case situation. Traffic noise changes were found to be not significant.
- 11.12.2 Fixed plant noise emissions were proposed as being limited to a level 5 dB below the background sound level, and thus assessed as representing a negligible adverse residual effect; and thus not significant.

11.13 Climate Change

- 11.13.1 Climate change does not directly affect the noise levels associated with the Proposed Development. However, it is considered that climate change, in the form of increasing temperatures at the Proposed Development, may indirectly affect the noise environment or the behaviour of the occupants of the Proposed Development in the following ways.

Operational Plant Noise Emissions

- 11.13.2 Should additional cooling be required by occupants, this may result in plant (e.g., ASHP) being run for longer periods. The design of plant noise emissions generally assumes that the units run at full duty, which therefore considers the worst case scenario.

Internal Ambient Noise Levels

- 11.13.3 The planned installation of active cooling (ASHP) at each residential unit provides flexibility to keep windows closed, should the residents wish to do so, in response to increasing temperatures created by climate change.

12.0 SOCIO ECONOMIC

12.1 Introduction

12.1.1 This Chapter, prepared by Rapleys LLP, reports the assessment of the likely significant environmental effects with respect to Socio Economics. It describes the methods used to assess the effects; the baseline conditions currently existing at the Site and surrounding area; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.

12.1.2 This Chapter should be read together with Chapters 1 to 5 in this ES.

12.2 Legislation, Policy and Guidance

Legislative Framework

12.2.1 No relevant legislative framework has been identified for Socio-Economics.

Planning Policy

National Planning Policy Framework (NPPF) December 2024

12.2.2 The updated NPPF was published in December 2024, following the General Election in July 2024. Some further minor revisions relating to 'Grey Belt' provisions were made in February 2025, but the base date of the NPPF remains December 2024.

12.2.3 The NPPF sets out the government's broad economic, social and environmental planning policies for England and how these are expected to be applied. The Framework promotes sustainable transport, addresses housing and economic needs, and guides development to support healthy and successful communities.

12.2.4 Chapter 5 of the NPPF, Delivering a Sufficient Supply of Homes, requires Council's to provide a supply of homes to meet local needs (in terms of amount and type/mix of dwellings) in accordance with the Standard Methodology.

12.2.5 Chapter 6, Building a Strong, Competitive Economy, encourages conditions in which businesses can invest and expand.

12.2.6 Chapter 8, Promoting Healthy and Safe Communities, emphasises the need to provide sufficient recreational, social and cultural facilities for all communities, new and existing, including access to high quality open space. Development of new communities should be safe and accessible to ensure quality of life, promote social interaction and enable healthy lifestyle choices.

- 12.2.7 Chapter 15, Conserving and Enhancing the Natural Environment, emphasises the importance of the natural environment though the protection of biodiversity, improving environmental conditions and balancing this with community needs.

Regional Planning Policy

- 12.2.8 No regional policy of relevance has been identified.

Local Planning Policy

- 12.2.9 The adopted Development Plan, as it relates to the Site, comprises –

- Forest Heath Core Strategy (December 2010) ('the Core Strategy'),
- Site Allocations Local Plan (2019),
- Joint Development Management Policies Document (February 2015) ('DMP Document'),
- West Suffolk Policies Map for the former Forest Heath area (February 2015), and

- 12.2.10 The main policies and supporting text as they relate to housing, economy, community facilities and open space are summarised below. For a full policy analysis, cross reference should be made to the Planning Statements which are submitted in support of each planning application.

Core Strategy Policies

- 12.2.11 Policy CS1 Spatial Strategy advises the settlement hierarchy which focuses growth on Newmarket as the key town, alongside Brandon and Mildenhall. Kentford is classed as Primary Village which provides basic facilities and could accept growth to meet local needs. No specific allocations are made for the village in this plan.
- 12.2.12 Policy CS2 Natural Environment – protection of natural environment and encouragement of restoration and enhancement alongside the creation of new habitats. Brandon Country Park and Lakenheath Fen are notable environmentally sensitive areas within the District.
- 12.2.13 Policy CS3 Landscape Character and Historic Environment – seeks to protect the quality, character and diversity of the landscape and setting of settlements.
- 12.2.14 Policy CS5 Design Quality and Local Distinctiveness – seeks to ensure high quality design for all development recognising local character and environment.
- 12.2.15 Policy CS Affordable Housing Provision – this policy requires 30% affordable provision where sites are greater than 10 dwellings; in Primary Villages (Kentford) 20% provision for schemes of 5-9 dwellings are required subject to viability.

- 12.2.16 Policy CS10 Sustainable Rural Communities – seeks to maintain and protect existing services and important local services and supports the creation of new services.
- 12.2.17 CS12 – Strategic Transport Improvement and Sustainable Transport – seeks to improve rights of way and encourage the creation of sustainable transport choices.
- 12.2.18 CS13 – Infrastructure and Developer Contributions – new development will be required to provide/improve service provision in areas such as health, education, open space to create sustainable communities.

Site Allocations

- 12.2.19 The Plan notes that for Kentford which had seen a high level of growth putting pressure in infrastructure and facilities, limit the extent of development that can take place. Extension to the Moulton Primary School (this being the closest one to Kentford) is catered for in allocation SA15 where 0.75ha is identified. Housing and employment allocations are identified as -
- SA13(a) for 34 dwellings (planning permission granted 2016)
 - SA13(b) for 63 dwellings allowed on appeal in 2016
 - SA16(g) 3ha existing employment at Lanwades Business Park
 - SA16(h) 0.9ha employment at south Gazeley Road
 - SA16(i) 0.3ha employment south of Bury Road

Joint Development Management Policies Document

- 12.2.20 The Plan provides policies for managing development expectations. Not all are specifically relevant to Socio Economics and the provision of facilities. The key relevant ones are -
- 12.2.21 Policy DM1 (Presumption in Favour of Sustainable Development) reflects the NPPF presumption and advises it will work proactively with applicants to find solutions which mean that proposals can be approved where possible and to secure development that improves the economic, social and environmental conditions of the area.
- 12.2.22 DM23 Special Housing Needs – proposals will generally be supported for elderly/vulnerable people subject to meeting specific criteria such as open space, access to sustainable transport, retail and community facilities.
- 12.2.23 DM41 Community Facilities and Services – provision and enhancement of facilities is encouraged to contribute to quality of community life and sustainable communities. Loss of such facilities will be resisted. New development will be required to provide community facilities either on site or through financial contribution.
- 12.2.24 DM42 Open Space, Sport and Recreation – development resulting in loss of existing facilities will not be allowed unless there is some form of replacement facility. New development is required to provide new facilities on site or through financial contribution.

Emerging Local Plan

12.2.25 A review of the adopted Development Plan has been underway since circa 2022. The review plan underwent Examination in the Autumn of 2024 and the Modifications are currently out for consultation. Adoption is anticipated by the end of the year, following receipt of the Inspector's Report. The Plan covers the period 2024- 2041 and makes provision for a total of 14,875 dwellings at an average of 875 dwellings per annum, although the identified local need is 13,005 (765 per annum); (4,293 new dwellings are identified with the remainder accrued through permissions and existing allocations) and 90ha of employment land. Circa 505 affordable homes per annum are required and to meet this, policy SPX requires 40% requirement on greenfield sites and 30% on brownfield sites.

12.2.26 The Plan requires housing type and tenure as set out below.

Table 12.1: Housing Type and Tenure (West Suffolk Local Plan Modifications)

Size	Market %	Affordable routes to ownership %	Affordable for rent%
1 bed	0-10	10-20	30-40
2 bed	30-40	40-50	30-50
3 bed	40-50	30-40	15-25
4+bed	10-20	0-10	5-15

12.2.27 Within this Plan, Kentford is identified as a Type A village that has some limited services but can meet the day-to-day needs of residents. Overall allocations within Type A villages are for 121 dwellings.

12.2.28 Policy SP15 Infrastructure – identifies that new development should provide new infrastructure delivery on site where possible and phased accordingly. Development should not compromise the ability of the schools to expand.

Guidance

12.2.29 Supplementary Planning Documents relevant to this chapter are noted as

- West Suffolk Sports Facilities Assessment (2022) identifying the future needs for indoor sports
- West Suffolk Playing Pitch and Outdoor Sports Facilities Assessment (2022) identifying current and futures needs for outdoor sports
- West Suffolk Public Open Space Assessment (2021) identifies what is available within the district and its accessibility to help plan future growth

12.3 Historic Assessment

- 12.3.1 There are no historic assessments in an around the Site that have any relevance to socio-economics.

12.4 Assessment Methodology and Significance Criteria

Scope and Extent of the Assessment

- 12.4.1 This assessment has been considered against the existing socio-economic conditions prevalent within West Suffolk. Comparable statistics for the East of England and England as a whole have also been obtained. There are no statutory standards of guidelines for defining impacts in socio-economic terms or significance of effects/magnitude of change. Professional judgement is used to consider proportionate impact in the local, regional and national context.
- 12.4.2 Effects on social and community infrastructure are assessed by various geographical effect areas, relative to the most up-to-date socio-economic data or policy available. Impacts of the Site on social and community infrastructure will likely be more local in nature, rather than regional or national.
- 12.4.3 Table 12.2 below identifies the geographic area of effect considered for various socio-economic facilities/service provision.

Table 12.2 – Geographic Area of Effect

Service Provision	Geographic Area	Rationale
Open Space	On-site/100m, 1.5km radius	A reasonable catchment
Primary Education	Within 5km of the site	Local circumstances and isolation warrant a larger area than the 1km reasonable walking distance
Secondary Education	Within 15km of site	As above
Primary Health Care Provision – doctors surgeries	Within 5km of the site	As above
Employment during construction phase	West Suffolk	Standard practice to consider effects at local level
Employment during operational phase	West Suffolk	Considered that only local level will be effected due to small amount of employment

Consultation

- 12.4.4 There has been no consultation in respect of the methodology or data collection for this chapter. No Scoping Opinion has been sought.

Identification of Sensitive Receptors

- 12.4.5 Criteria used to assess receptor sensitivity is identified in the Table below.

Table 12.3: Criteria for determining receptor sensitivity

Sensitivity	Criteria
High	Receptors most directly affected by the Site and those with significant economic or social stake in the area, ie, residents of the Site, and other local residents
Moderate	Receptors sensitive to effects as a result of proximity, accessibility, special facilities/uses provided within the Site, ie, local community facilities, businesses
Low	Receptors likely to experience some effect from the Site but at a low level, ie, existing local businesses
Negligible	Receptors with minimal connection to the Site and little likelihood of being affected, ie, regional population

Assessment Methodology

- 12.4.6 The Application Sites has been assessed in the context of an analysis of the socio-economic characteristics of the research area, including:
- Demographics (population count and demographic structure)
 - Economy and Employment (economic activity and employment composition)
 - Wealth and Deprivation (levels of deprivation and material wealth)
 - Housing (house prices, tenures and compositions)
 - Education and Training (level of education and existing capacities)
 - Health, Community and Leisure (existing facilities and provision).
- 12.4.7 The baseline assessment of the socio-economic conditions was predominantly a desk-based exercise. The main data sources utilised are outlined below, and a full list of websites visited during the gathering of baseline data can be found in the references:
- Nomis Official Labour Market Statistics: 2021 Census Data¹

- Census Data (Office for National Statistics (ONS) 2022,2024)²
- Construction Skill Network Forecast 2023-2027 (Construction Industry Training Board 2023)³
- HM Land Registry Open Data website⁴
- The website of West Suffolk Council
- The website of Suffolk County Council
- The Department for Education data⁵
- HCA Employment Densities Guidance 2019⁶
- National Travel Survey⁷
- HCA Additionality Guide 4th Edition 2014⁸
- Annual Population Survey (ONS 2024)⁹
- National Housing Federation (2019) Local Economic Impacts Calculator¹⁰
- National Health Service data (NHS England)¹¹
- SCC Developer Guide to Contributions 2021¹²
- Department for Levelling Up, Housing and Communities (DULUHC) formerly MHGLC) data¹³; and
- Google search and maps.

12.4.8 For the most part, socio-economic assessment is a qualitative assessment as it is not universally appropriate or possible to predict precise impact levels, as for example Air quality. However, where possible, quantitative assessment has been undertaken, particularly in relation to assessment of employment and economic effects. Gross employment is calculated in relation to demolition and construction phases of the Site, based on a turnover per construction employee estimate. The number of Full Time Equivalent (FTE) jobs created have been calculated based on the convention that each permanent FTE job is equivalent to ten person years of temporary employment.

12.4.9 For the operational period, employment density figures for the non-residential uses within the Site are, where possible, derived from the HCA Employment Densities Guide⁶.

12.4.10 In calculating the estimated number of jobs generated by the Site, both at the demolition and construction and operational stages, the methodology follows that set out in the HCA Additionality Guide 4th Edition⁸. The guidance recommends that the gross number of jobs should be adjusted to arrive at a net figure which takes account of deadweight and displacement. The same guidance has been used when calculating the indirect and induced multiplier effects. For clarity, the definitions of these terms are summarised below:

- Deadweight: defined as the 'output that would have occurred without the intervention'. In this case the 'intervention' is the Site;

- **Leakage:** defined as the 'proportion of outputs that benefit those outside the programme/project's target area or group. In the case of employment generation, this is interpreted as those taking up employment generated by the Site but living outside West Suffolk. Analysis carried out on Census 2021 data indicates that circa 20% of people working in West Suffolk live outside the area. This corresponds to a medium leakage rate as set out within the HCA Additionality Guidance, and implies that a reasonably high proportion of employment opportunities will go to people living outside West Suffolk;
- **Displacement:** refers to the 'proportion of project outputs/outcomes accounted for by reduced outputs/outcomes elsewhere in the target area', so additional jobs created cannot be regarded as net additional benefit. For the purposes of this assessment a low displacement factor of 25.0% has been applied to both demolition and construction and operational job creation based on guidance set out within the HCA Additionality Guidance; and
- **Indirect Multiplier Effects:** Housing construction involves purchases from a range of suppliers and the relationships between initial direct spending and total economic impacts are known as the 'multiplier effect'. Local business across West Suffolk could benefit from trade connections established during the construction of the development, ie, jobs created down the supply chain (indirect). For the purposes of this assessment, the Home Builders Federation (HBF) 'The Economic Footprint of House Building' Housing Federation (2015) has been used which indicates that the construction industry has an indirect and induced multiplier based on 1 construction job generating 1.5 indirect jobs.

Significance Criteria

12.4.11 The magnitude of change, how far an effect differs from the baseline condition, is described in the table below.

Table 12. 4: Criteria for determining magnitude of change/impact

Magnitude	Criteria
Large	Effect would have a significant economic or social impact locally or more widely than town/city scale. Potentially affects a large number of receptors or those with high sensitivity
Medium	Effect has material economic or social impact locally
Small	Effect has some economic or social impact at a much more localised level – on site
Negligible	Effect has minimal economic or social impact

Significance of Effects

- 12.4.12 The significance of a potential effect is derived by considering both the sensitivity of the feature and the magnitude of change, identified as follows -

Table 12.5: Significance of Potential Effects

		Magnitude of Change/Impact			
		Large	Medium	Small	Negligible
Receptor Sensitivity	High	Major	Major	Moderate/Minor	Negligible
	Moderate	Major	Moderate	Minor	Negligible
	Low	Moderate/Minor	Minor	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

- 12.4.13 It should be noted that effects can also be described as Beneficial/Adverse/Neutral; Permanent or Reversible/Temporary; Short (less than 1 year) /Medium (1-5 years) /Long Term (greater than 5 years). In this context, it is usual for effects associated with demolition and construction to be considered as temporary, short to medium term, and for long term effects to be associated with the completed operational development. **Moderate** and above are significant in EIA terms.

Limitations and Assumptions

- 12.4.14 The baseline assessment necessarily relies on published sources of data. The most up-to-date published data has been used wherever possible. It should also be acknowledged that baseline conditions are subject to change over time, which could lead to a statistical time lag attributable to the assessment.

12.5 Baseline Conditions

The Site and Topography

- 12.5.1 The Site comprises existing buildings in various uses together with considerable tree and vegetation cover. It is in Flood zone 1. There are a number of European and national environmental designations within 5km of the Site. There are two existing accesses off the B1506 into the western part of the Site which will be retained. Two further access points also off the B1506 are proposed via Sir Graham Kirkham Avenue and Shire Lane.
- 12.5.2 The Site is considered to be brownfield land.
- 12.5.3 The Site has not supported any employment since 2020.
- 12.5.4 Kentford has the following facilities within the settlement – a business park, 2 pubs, a shop and post office, village hall, playground and a church. There is also a station (Kennett) circa 10-minute walk north from

Shire Lane (the existing access to the Site) - this provides a regular 2 hourly service to Cambridge via Newmarket and to Ipswich via Bury St Edmunds. A bus (16/16A) also serves the station as well as Kentford with an hourly service that travels from/to Newmarket-Moulton-Kennett-Red Lodge-Workington-Mildenhall-Icklingham- Lackford-Bury St Edmunds.

Demographic Profile

- 12.5.5 West Suffolk covers an area of 1,035km² and has a population density of 176/km² .
- 12.5.6 The current 2023 population of West Suffolk, with reference to the ONS Population Projections is circa 186,063 (0.3%), against an East of England population of 6,468,665 and England population of 57,690,323. In 2030, the equivalent population is anticipated to be 185,822; 6,558,594 and 59,181,801 respectively. The population in 2040 is anticipated to be 190,680; 6,772,234 and 61,157,877 respectively.
- 12.5.7 Population growth in West Suffolk between 2010-2020 mirrored the growth both regionally and England-wide, i.e. circa 10%. In 2022, the urban population was circa 60% (102,477) and the rural population 40% (68,279).
- 12.5.8 In 2023, 113,754 (83.2%) residents of West Suffolk were of working age (between 16-64) compared to 36,258,886 (78.8%) for England and 3,963,647 (79.3%) for East of England.
- 12.5.9 In 2023, young residents (0-14) totalled 31,620 (16.9%) in West Suffolk, 15-64 age range totalled 106,599 (57.2%) and 65+ age range 38,707 (20.8%). Corresponding ranges for East of England were 1,136,637 (17.5%); 3,678,515 (56.8%) and 1,288,587 (19.9%) and for England were 9,942,344 (17.2%); 33,559,829 (58.1%) and 10,783,087 (18.6%).
- 12.5.10 According to the Census, in 2021, the largest ethnic group in West Suffolk were white (91.3%), compared to 86.4% in East of England and 81 % in England. The second largest is Asian/British Asian at 2.6%, 6.4% and 9.6% respectively.
- 12.5.11 In 2023, 39.3% of residents in West Suffolk, between 16-64, had a degree or higher level qualification (National Vocational Qualification Level 4+), lower than East of England at 42.8% and England at 46.7%.

Economic Profile

- 12.5.12 In 2023, the economic activity rate for those aged 16-64 within West Suffolk was 83.2% compared to 78.8 and 79.3% for the eastern region and UK respectively. West Suffolk has consistently had a higher economic activity rate than either comparator (note this is based on pre-Covid trends).
- 12.5.13 Unemployment in 2023 was very similar across West Suffolk, East of England and England at 3.6%, 3.3% and 3.9% respectively.
- 12.5.14 West Suffolk economy ranks as one of the most prosperous, with Gross Domestic Product(GDP) worth estimated £6.1billion in 2021, with growth between 2020 and 2021 at 5.1%. West Suffolk represents 0.3%

of the English economy and is 15th out of the 164 non-metropolitan districts. Per capita GDP is £33,514 in West Suffolk (22nd out of 164).

- 12.5.15 Travel to work within West Suffolk is overwhelmingly by car at 57.6% according to the 2021 Census, compared to 54.6% for Suffolk as a whole and 45.1% for England. Some 23.5% were identified as working from home or at home, compared to 26.2% for Suffolk and 31.2% for England.
- 12.5.16 Over 50% of workers have a journey of less than 10km to work in both West Suffolk and Suffolk, less than the 65% for England as a whole.
- 12.5.17 Industries with the greatest proportion of workers within West Suffolk are Public admin/education/health at 29.1%, with hotel and leisure services second at 20.5%. However, in East of England and England as a whole, the second greatest proportion is financial banking services at 19.1% and 20.2%. (See Table 12.6 below).

Table 12.6: Proportion of Employees by Industry %

INDUSTRY	WEST SUFFOLK	EAST OF ENGLAND	ENGLAND
Agriculture/fishing	1.9	1.0	0.8
Energy and Water	1	1.4	1.4
Manufacturing	11.1	7.9	8.2
Construction	7.7	6.9	6.5
Distribution, Hotels, Restaurants	20.5	15.9	15.3
Transport and communications	5.3	10.0	9.8
Banking , finance, insurance	19.4	20.4	19.1
Public admin education, health	29.1	31.1	32.9
Other services	4.1	4.9	5.7
Total Services	78.5	82.5	82.8

Wealth and Deprivation

- 12.5.18 The Index of Multiple Deprivation (IMD) is a national dataset published by the Department of Levelling Up, housing and Communities and provides a tool for ranking deprivation spatial analysis of England at the

local authority level. The IMD uses employment, education, skills and training, health and disability, crime, barriers to housing services and living environment to identify an index.

- 12.5.19 According to the IMD, West Suffolk ranked 176 out of the 317 local authorities in England in 2019 (174 in 2015). There are no West Suffolk Lower Layer Super Output Areas (LSOA's) in the 10% most deprived and only 1% of LSOA's in the 20% most deprived.
- 12.5.20 The relative ranking of West Suffolk in relation to education, skills and training has improved, but relative deprivation relating to health and disability has declined. Barriers to housing and services remains low, but this is a common pattern across most rural areas.
- 12.5.21 In 2023, the crime rate in West Suffolk was 5,037 incidents per 100,000 population. This is equivalent to 0.4% of England's total crime incidents in that year. West Suffolk is the 22nd safest non-metropolitan district in England out of 164, as ordered by crime rate.
- 12.5.22 Average salary in West Suffolk is £33,798 in 2023. This is 3.7% lower than the England average (£35,106). West Suffolk ranks 57th out of the 164 non-metropolitan districts.

Housing

- 12.5.23 According to the 2021 Census, 62.3% of households in West Suffolk area owned and owner occupied, whilst 19.8% are privately rented and 16.7% socially rented and 1.2% are shared ownership. This compares to East of England at 66.6%, 16.5%, 15.8% and 1%, and England at 62.6%, 18.8%, 17.5% and 1% respectively.
- 12.5.24 The average property price in West Suffolk was £337,186 in 2023 as published by the Land Registry. Between 2022 and 2023, prices grew by £18,558, a growth rate of 5.8%. Average price growth for England is 7.1% with average property prices at £377,216. This is at odds with the Housing Needs Assessment which suggests prices are £305,000 in West Suffolk compared to £340,000 in East of England and £291,000 in England in 2024.
- 12.5.25 Average prices for a terrace in West Suffolk are £273,427, semi-detached are £294,958 and detached are £461,448.
- 12.5.26 The most common property type in West Suffolk which were sold in 2023 were detached (34.5%), whilst flats were the least common at 8.1%.
- 12.5.27 Average rents in West Suffolk are £1,082/month, which is higher than the England average at £994. This makes West Suffolk the 53rd most expensive non-metropolitan district.
- 12.5.28 The ONS Census derived data from 2021 identifies that the average house occupancy in West Suffolk is 1.21 for a 1 bed property, 1.79 for a 2 bed, 2.32 for a 3 bed, 2.7 for a 4 bed and 2.7 for a 5 bed.

12.5.29 Bidwells Housing Need Assessment Report, March 2024 produced as part of the Local plan Review process identifies a need for 15,950 dwellings between 2023-2040, ie, 938 per annum. Affordable need is identified as 505 per annum.

Education

- 12.5.30 The average trip distance for school children between ages 5-16 in 2019 was 2.4miles (3.8km) at an average time of 19 minutes according to the National Travel Survey in 2019, although this is variable between type of school and age of pupils.
- 12.5.31 The Department of Education's cross-border movement survey for 2021/2022 identifies that 98.1% of primary school pupils in Suffolk attend schools in Suffolk (there is no further breakdown for West Suffolk). For secondary education, the figure is 97.3%.
- 12.5.32 Kentford does not have a primary school or secondary school, the nearest in each case within West Suffolk, being Mouton Primary School at 3km and Mildenhall College (age 11-18) at 10km.
- 12.5.33 It is acknowledged that the existing Kennett Primary is closer - this is a 1FE school within East Cambridgeshire which has limited capacity, although it is noted that in 2018/19 there was a cross-border agreement to allow some pupils from Kentford to attend Kennett School. In addition, because of the constrained site of the existing Kennett school, a new primary school has been provided as part of the 500 house Kennett Garden Village. However, again this is a 1 FE school. Capacity of that school is still building up as more houses are developed and occupied and it is likely that there will be limited or no capacity for new pupils from the Site. The capacity of this school has been omitted from the capacity calculations for that reason. Furthermore, it is not known whether there is still a cross-border arrangement between East Cambridgeshire and West Suffolk.
- 12.5.34 The study area has been set at 3km for Primary school and 10km for secondary schools, notwithstanding schools outside of this are included within the table – this is for information only to show the relative distance pupils currently have to travel.

Table 12.7 Primary Schools

School	Local Authority & distance from site	Number on Roll 2024	Capacity	Surplus/deficit	S/D at 95% capacity
Kennett Primary	East Cambridgeshire 2.2km	105	210	105	94.5
Moulton Primary	West Suffolk 3km	201	210	9	-1.5
St Christophers VC Primary	Red Lodge, West Suffolk	323	390	67	47.5

	5.3km				
Barrow C of E Primary	West Suffolk 6.7km	212	210	-2	-12.5
TOTAL		736	810	74	33.8

12.5.35 The data suggests that there is very limited capacity at Moulton, circa 9 places. Assuming a 95% occupancy is planned for as per National Audit Office (NAO) Guidance, the total surplus decreases to -1.5 places – essentially, there is no capacity at Moulton Primary School to accommodate pupils that may be generated by the Site.

12.5.36 Table 12.8 identifies secondary schools data within 15km of the site. It identifies some limited capacity at Mildenhall College and Newmarket Academy. It is understood, however, that pupils from Kentford generally go to either Newmarket or Soham rather than Mildenhall. Furthermore, there is considerable new development proposed at both Newmarket and Red Lodge (the latter pupils attend Mildenhall) which may further limit the ability of these secondary schools to cater for pupils generated by the Site.

Table 12.8: Secondary Schools

School	Local Authority & distance from site	Number on Roll	Capacity	Surplus/Deficit	S/D at 95% capacity
Mildenhall College 11-18	West Suffolk 10km	1,330	1,565	235	156
Newmarket Academy 11-16	West Suffolk 7.7km	831	900	69	24
Soham Village College 11-16	East Cambridgeshire 15.6km	1,414	1,350	-64	-131
TOTAL		3,575	3,815	240	49

Health

- 12.5.37 Norfolk and Suffolk NHS Trust Foundation serves a population of circa 1.6m. Within West Suffolk there are 18 GP practices serving in excess of 200,00 patients within 6 Primary Care Networks (PCN). Kentford falls under the Forest Heath PCN where 8 surgeries are identified serving over 73,000 patients. Table 12.10 below identifies the surgeries within the PCN, number of doctors/nurse practitioners (NP) and patients, and distance to the Site. WHO recommends 1,000 patients/GP, however, the current average number of patients per GP in England is 2,294 as of April 2024 (a 7.2% increase since 2019).
- 12.5.38 It is also understood that the Kennett Garden Village (KGV) in East Cambridgeshire will be providing a health centre as part of the development. The potential impact of this is considered within the cumulative assessment section of this chapter as far as it can be (it is noted that the Environmental Statement for the KGV planning application assumed 2 new GP's.).
- 12.5.39 Pharmacies are available in Newmarket (Tesco Pharmacy at Fordham Road, Lords Pharmacy and Superdrug in the Guineas Shopping Centre, Boots in the High Street and Chemistree Pharmacy at Oaks Drive).
- 12.5.40 Dental surgeries are found at Red Lodge and Newmarket, the closest in Newmarket being Dentata Charta. As at March 2024, there were on average 26.2 FTE dentists per 100,000 population in England.

Table 12.9: GP Practice Data

GP Practice	Distance (KM)	No. of Doctors	Registered Patients
Reynard Surgery, Red Lodge	3.7	3 GP 2 NP	9,780
Oakfield Surgery, Newmarket	7	4 GP 1 NP 2 paramedics	7,363
Orchard House Surgery, Newmarket	7.4	10 GP	10,500
The Rookery Medical Centre, Newmarket	7.5	11 GP	14,114

Open Space/Leisure

- 12.5.41 According to the SCC 2021 Open Space Assessment Report there are a total of 561 open space sites within West Suffolk, equating to circa 742ha – parks, amenity green space and natural greenspace contribute over 92% of this provision (note this excludes large site such as Mildenhall Woods and Nature Reserves).
- 12.5.42 Provision for children and young people include areas designated primarily for play such as equipped play area, ball courts, skateboard areas. At total of 191 play locations (fixed equipment) are identified, circa 14ha. Overall current provision is 0.08ha per 1,000 population. Anvil Way in Kentford is 0.01ha and is the closest open space to the Site. Gazeley Playing Fields in Newmarket at 0.04ha also lies within the Kentford/Moulton Ward.
- 12.5.43 Allotment provision is provided for within 39 sites, circa 43ha, a provision of 0.24ha/1,000 population set against the National Society of Allotment and Leisure Gardeners standard of 0.25ha/1,000 population.
- 12.5.44 In looking at open space provision or accessibility within the Kentford/Moulton ward, there is a deficit against recommended quantity standards of -1.11/1,000 population for parks and gardens; -0.7 for natural and semi natural space; +0.99 for amenity greenspace; -0.16 for allotments and +0.02 for play space.
- 12.5.45 The only defined open space within a 1.5km radius of the Site is the play area in Kentford. The Kennett Garden Village is providing circa 12ha of green space in a combination of children's play space, linear parks, some allotments/community orchard and a village green.

12.6 Assessment of Effects, Mitigation and Residual Effects

Site Enabling and Construction

- 12.6.1 Construction activities associated with the development will generate new construction employment opportunities, the scale of which has been estimated using standard ratios as set out in the assessment methodology. In order to assess net impacts on the economy, consideration is also given to leakage, displacement and multiplier effects (indirect employment).

Detailed Application (Eastern Parcel)

Effects

Economic – Gross Direct Construction Employment

- 12.6.2 Direct expenditure arising from the development will lead to increased output generated within West Suffolk, and the wider eastern regional economies. The estimated construction cost of the development is used to assess the potential construction job creation. Using the labour coefficient from the HCA Calculating Cost per Job Best Practice Note (2015), it is possible to estimate the direct number of construction jobs that could be generated by the development over the course of the construction phase. The coefficient for new

housing is the most appropriate measure and this assumes that 19.9 years of Full Time Equivalent (FTE) employment would be generated per £1m of construction cost in 2011 prices.

- 12.6.3 The estimated construction cost has been deflated to 2011 prices using the Bank of England deflator calculator, resulting in a construction cost of £688,774
- 12.6.4 Applying 19.9 coefficient to £688,774 then dividing the result by the length of the construction phase (4 years) suggests the development could support 343 FTE annually.
- 12.6.5 Direct net construction is set out in Table 12.10 below, taking into account leakage (20%), displacement (25%) and multiplier effects (indirect) (1:5 (50%)) for the 4 years of construction.

Table 12.10: Net Construction Employment (Detailed Application)

	West Suffolk Per Annum	Elsewhere	Total over 4 years
Gross direct employment	274	69	1,372 (343/annum)
Displacement	68	17	340 (85/annum)
Net direct employment	206	52	1,032 (258/annum)
Indirect employment	103	26	516 (129/annum)
TOTAL NET	309	78	1,548 (387/annum)

- 12.6.6 The net employment and expenditure created by the construction phase for 301 dwellings is considered to result in a **Moderate beneficial (significant)**, long-term, temporary effect on the West Suffolk economy.

Supplementary Mitigation

- 12.6.7 There are no significant adverse socio-economic effects identified for the development that require mitigation during the construction phase.

Residual Effects

- 12.6.8 There are no socio-economic residual effects identified for the construction phase of the Detailed Application .

Hybrid application (Eastern Parcel and Western Parcel)

Effects

- 12.6.9 The principles and parameters set out above for the Detailed Application also apply to Hybrid Application with the exception that the construction period is extended to 6 years (72 months). The Table below

therefore details the net construction employment for the larger development, where the construction cost is estimated to be £224m at 2011 prices, which suggests the development could support 743 FTE per annum.

Table 12.11: Net Construction Employment (Hybrid Application)

	West Suffolk per annum	Elsewhere	Total over 6 years
Gross direct employment	594	149	4,458 (743/annum)
Displacement	148	37	1,110 (185/annum)
Net direct employment	446	112	3,348 (558/annum)
Indirect employment	223	56	1,674 (279/annum)
TOTAL	669	168	5,022 (837/ annum)

12.6.10 The development is assessed to result in a **Major beneficial (significant)**, long-term and temporary effect on the West Suffolk economy.

12.6.11 Due to the phased nature of the development over circa 6 years, there will be a period of time when part of the development is occupied and operational whilst the other part is under construction. Intermediate effects are therefore likely to arise.

12.6.12 The nature of socio-economic effects is such that there is limited interaction between construction and operational effects that generally necessitate separate detailed assessment. Consequently, concurrent construction and operation of part of the development is not expected to result in a revision to the significance of effects identified in paragraph 1.6.10 above.

Supplementary Mitigation

12.6.13 There are no significant adverse socio-economic effects identified for the Hybrid Application that require supplementary mitigation during the construction phase.

Residual Effects

12.6.14 There are no residual socio-economic effects identified for the construction phase of the Hybrid Application

OperationDetailed ApplicationEffectsEmployment and Economy

12.6.15 There is no existing employment on the Site and Detailed Application will not generate new jobs on site.

Housing

12.6.16 In total, this element of the development is for 302 houses with 20% affordable provision (60 dwellings). The indicative dwelling mix is presented below.

12.6.17 Using the average occupancy rates for West Suffolk, the number of residents for the scheme can be calculated, as presented in table 12.12 below. It should be noted that no distinction is made in this calculation between market and affordable housing occupancy levels.

Table 12.12: Average Occupancy of Dwellings in West Suffolk

Dwelling Type - house	1 bed	2 bed	3 bed	4 bed	5 bed	TOTAL
Scheme mix	37	66	155	39	17	302
WS average occupancy	1.21	1.79	2.32	2.7	2.7	
Persons	27	138	329	119	43	656

12.6.18 A total of 656 new residents could arise from as a result of development under the Detailed Application.

12.6.19 The Emerging Local Plan sets out a target of 14,875 dwellings by 2041, resulting in an average of 875 dwellings per annum. The development, as part of the Detailed Application will contribute to meeting that target through the provision of 302 homes, ie, approximately 2% of West Suffolk's housing target, or 34% of the annual requirement. Of the 302 homes to be provided, circa 202 (67 %) will be suitable for families (3+beds).

12.6.20 In terms of affordable housing, the policy requirement of 30% would generate a requirement of 90 against a proposed provision of 60 affordable homes (0.7% of the 8,585 requirement), which is considered to represent an overall **negligible** long-term permanent effect.

12.6.21 On completion of the development, the additional 302 homes are considered to have an overall **minor beneficial**, long term, permanent effect, which is not significant.

Education

12.6.22 The development will result in an increased demand for school places from any household with children of school age. For the purposes of this assessment, the pupil yield as set out in SCC Developer Guide to Contributions 2021 has been used, as per table 12.13 below.

Table 12.13 Pupil Yield per Dwelling Type

Dwelling type	Primary		Secondary		Sixth Form	
	Per dwelling	Per 100 homes	Per dwelling	Per 100 homes	Per dwelling	Per 100 homes
Houses of 2+ beds	0.25	25	0.18	18	0.04	4
Flats with 2+ beds	0.15	15	0.02	2	0.01	1
Flats 1 bed	0.05	5	0.01	1	0.01	1

12.6.23 The numbers of estimated pupils is therefore 67 for primary and 45 for secondary and 11 for sixth form arising from the 302 homes, (including assumption that maisonettes are classed as flats).

Table 12.14 Pupil Yield for the Detailed Application

	Primary	Secondary	Sixth Form
2+ beds Houses	61	44	10
2+ bed flats	5.4	0.72	0.36
1 bed flats	1	0.2	0.2
TOTAL	67	45	11

12.6.24 The baseline analysis indicated that there was a deficit of -1.5 primary places and a surplus of 156 secondary places within the two schools closest to the Site at an occupancy of 95%. The expected demand for primary places of 67 pupils could not be met within Moulton Primary School and as such is considered to represent a **moderate adverse** effect on the provision of primary school places at the local level.

12.6.25 The expected demand for secondary places (including sixth form) is 56. It has been identified that although there is capacity at Mildenhall, most current pupils from Kentford either attend Soham College in Cambridgeshire or Newmarket Academy. Furthermore, the level of development that is already committed to take place within Newmarket and Red Lodge, as well as Kennett Garden Village is expected to take up any spare capacity in all of the identified schools. Therefore, the development is considered to have a **moderate adverse** effect on secondary education provision.

Healthcare

- 12.6.26 There is no GP practice within 1km walking distance of the Site. The nearest existing practice is 3.7km away. WHO recommends 1,000 patients per GP. The NHS England statistics indicate the average in England is currently 2,294 patients per GP. For the Reynard Practice each of the 3 GP's have circa 3,260 patients considerably more than the England average. The further afield from the Site, the situation improves to much less than the England average.
- 12.6.27 The new population of 656 residents will place additional demand upon the local healthcare facilities. In the event that all new residents register with the nearest GP practice, patients per GP would increase from 3,260 to 3,916 (an 17% increase). This is the worst-case scenario. The effect would reduce if the residents were spread across a number of practices.
- 12.6.28 It is therefore assessed that the Detailed Application will likely have an overall **moderate-minor adverse**, long-term, permanent effect on primary healthcare provision within West Suffolk.

Open Space

- 12.6.29 The development will generate circa 656 new residents who will place additional demands on open space. The Site is not within a reasonable walking distance (1.2km) of open space, other than a local children's play area within Kentford itself. West Suffolk Council standards for open space provision for parks and gardens are 1.11ha/1,000 population, for natural/semi-natural space at 1.28ha, amenity space at 1.43ha, play space is 0.08ha and allotments are 0.24ha, as set out in the SCC Public Open Space Assessment of December 2021.
- 12.6.30 Table 12.15 below identifies the respective requirements.

Table 12.15: Open Space Requirements Arising from the Detailed Application

Type of Space	SCC Requirement/1000 population	Requirement	Detailed App Provision
Parks & Gardens/Pocket Green	1.11ha	0.73ha	1.2ha
Natural/semi-natural space	1.28ha	0.84ha	3.1ha
Amenity Space	1.43ha	0.94ha	1.4ha
Children's play space	0.08ha	0.05ha	0.4ha
Allotments	0.24ha	0.2ha	0ha
TOTAL		2.76ha	6.1ha

- 12.6.31 Overall, it is estimated that the development will have a **minor adverse** effect, long-term permanent effect on open space provision in the local area.
- 12.6.32 Specifically in terms of play space, the existing site at Anvil Way is circa 0.01ha. Circa 123 children will be generated by the development as set out in table 12.16. Applying the local policy targets there is a need for 0.05ha of play space to serve 123 children once completed and fully occupied. The development will provide play space of 0.39ha. Overall, the development is therefore, considered to have an overall **minor beneficial**, long-term, permanent effect on play space provision within Kentford.

Supplementary Mitigation

- 12.6.33 The development will place additional pressure on local school infrastructure in terms of both primary, secondary and sixth form school places. Furthermore, there is limited to no capacity within existing schools. However, it is expected there will be financial contributions secured via a legal S106 agreement which will go towards education.
- 12.6.34 In terms of healthcare, it is anticipated S106 contributions will be made to the local Health service which will assist in providing additional capacity for residents generated by the development.

Residual Effects

- 12.6.35 Taking into account S106 contributions towards primary and secondary education provision, the resulting effects will be reduced, and it is therefore assessed that the development will likely have an overall **minor adverse**, long-term permanent effect for primary and **minor adverse**, long-term, permanent effect for secondary at the local level.
- 12.6.36 Similarly, taking into account S106 contributions towards healthcare, resulting effects will be reduced and it is therefore assessed that the development will likely have an overall **minor adverse**, long-term permanent effect on healthcare provision at the local level.

Hybrid application (Eastern Parcel and Western Parcel)

Effects

Economy and Employment

- 12.6.37 The development will generate long-term jobs once it is complete and operational. In estimating job generation, it is important to consider the gross effects of the development and net effects taking into account leakage, displacement and multiplier effects.
- 12.6.38 There is no existing employment on the Site.
- 12.6.39 Employment generated from the development will depend on the final development mix and its exact split of floorspace by use class, however, the following assumptions of the commercial elements at this stage are:

- Retail unit, circa 386sqm
- Employment space of 850sqm (office/workspace)
- A 90 bed care home
- A 1FE Primary school

12.6.40 The 2015 HCA Employment Density Guide estimates 15-20sqm per job for retailing and 30sqm for office space. Efficiencies since Covid in retailing suggest 30sqm per worker – the latter has been used here. There are no set standards for staffing care homes. The Royal College of Nursing in 2010 identified staff ratios to patients of 1:4.2 during the day and half as many during the night. There are no official estimates for the total number of staff employed in a 1FE primary school, but a recent paper published in 2025 suggests on average a 1FE school employs circa 30 staff (leadership, teachers, assistants and other staff).

12.6.41 Consequently, when these above-mentioned standards are applied to the development, the potential job creation is as follows:

- Retail unit – circa 10FTE jobs
- Employment space – 30 jobs
- Care home – 30 jobs (assuming 90% capacity across 24 hour period)
- Primary school – 30 jobs
- TOTAL – circa 100 gross direct additional jobs on site

12.6.42 The Site does not currently support employment and therefore the development will not result in the loss of any jobs associated with existing activities on-site. Assuming displacement and multiplier effects as set out at paragraph 1.7.5, the total net gain in employment can be seen in Table 12.16 below.

Table 12.16 Net operational Employment – Hybrid Application

Employment Space	Project – West Suffolk	Elsewhere	TOTAL
Gross direct	80	20	100
displacement	20	5	25
Net direct employment	60	15	75
Induced & indirect	30	7.5	37.5
Total Net Employment	90	22.5	112.5

12.6.43 Consequently, it is considered that the permanent employment created by the development, would likely lead to a **minor beneficial**, long-term permanent effect on the West Suffolk economy.

Housing

- 12.6.44 In total, this aspect of the development is for 860 houses with 30% affordable provision., plus a 90 bed care home. Indicative dwelling mix is presented below.
- 12.6.45 Using the average occupancy rates for West Suffolk, the number of residents for the scheme can be calculated, as presented in table 12.20 below. It should be noted that no distinction is made in this calculation between market and affordable housing occupancy levels.

Table 12.17: Average Occupancy levels in West Suffolk – Hybrid Application

Dwelling Type - house	1 bed (including care home)	2 bed	3 bed	4 bed	5 bed	TOTAL
Scheme mix	22+90=112	175	477	161	25	860+90=950
WS average occupancy	1.21	1.79	2.32	2.7	2.7	
Persons	136	313	1,107	435	68	2,059

- 12.6.46 A total of 2,059 new residents could arise from the development.
- 12.6.47 The development, as part of Hybrid Application, will contribute to meeting Local Plan target of 14,875 dwellings through the provision of 860 homes (875/annum) i.e. approximately 5.7% of West Suffolk's housing target or the equivalent of 98% of 1 whole year's worth of supply. Of the 860 homes to be provided, circa 663 (77%) will be suitable for families (3+beds).
- 12.6.48 On completion of this part of the development, the additional 860 homes and 90 bed care home are considered to have an overall **moderate beneficial (significant)**, long-term, permanent effect on the overall housing requirement of the plan period at the local level, within West Suffolk.
- 12.6.49 In terms of affordable housing, the policy requirement of 30% will generate 287 affordable homes. With overall provision of (3% of the 8,585 requirement), the development is considered to have an overall **minor beneficial** long-term permanent effect on affordable housing at the local level within West Suffolk.

Education

- 12.6.50 The development will result in an increased demand for school places from any household with children of school age. Applying the yield calculations set out in table 12.18 the numbers of estimated pupils is therefore 206 for primary and 177 for secondary arising from the 860 homes.

Table 12.18 Pupil Yield for the Hybrid Application

	Primary	Secondary	Sixth Form
2+ beds Houses	198.5	143	32
2+ bed flats	6.6	0.88	0.44
1 bed flats	1	0.44	0.22
TOTAL	206	144	33

12.6.51 The baseline analysis indicated that there was a deficit of -1.5 primary places and a surplus of 156 secondary places within the two schools closest to the Site at an occupancy of 95%. The expected demand for primary places of 206 pupils could not be met within Moulton Primary School.

12.6.52 The development is providing a 1FE primary school on site, which will have capacity for 210 pupils and therefore will be able to accommodate the full complement of primary pupils generated by the development. Consequently, it is considered that the development is likely to have an overall **negligible**, long term permanent effect on primary education at the local level.

12.6.53 With regard to secondary school places, it is considered that the expected demand of 177 pupils would have a **major adverse**, long-term permanent effect on the provision of secondary school places at the local level.

Healthcare

12.6.54 There is no GP practice within 1km walking distance of the Site. The nearest practice is 3.7km away. WHO recommends 1,000 patients per GP. The NHS England statistics indicate the average in England is currently 2,294 patients per GP. For the Reynard Practice each of the 3 GP's have circa 3,260 patients considerably more than the England average. The further afield from the Site, the situation improves to much less than the England average.

12.6.55 The new population of 1,950 residents will place additional demand upon the local healthcare facilities. The residents of the care home have been excluded from this calculation as it has been assumed that they are already registered with GP practices within West Suffolk and will therefore not increase the demand/need overall. In the event that all the 1,950 new residents register with the nearest GP practice, patients per GP would increase from 3,260 to 5,210 (38% increase). This is the worst-case scenario. The effect would reduce if the residents were spread across a number of practices.

12.6.56 It is therefore assessed that the Hybrid will likely have a **major adverse**, long-term, permanent effect on primary healthcare provision within West Suffolk.

Open Space

- 12.6.57 The Site is not within a reasonable walking distance (1.2km) of open space, other than a local children's play area within Kentford itself, which is circa 0.01ha in size. New residents will increase demand on open space within the local area. Table 12.19 below identifies the open space requirement by typology, and the requisite provision being made within Hybrid Application, based on the 1,950 new residents (excluding the care home occupants as it is assumed their need will be passive and for the most part met within the care home grounds itself).

Table 12.19: Open Space Requirements Arising from Hybrid Application

Type of Space	SCC Requirement/1000 population	Requirement	Hybrid Application Provision
Parks & Gardens & pocket green	1.11ha	1.95ha	6.44a
Natural/semi-natural space	1.28ha	2.5ha	10ha
Amenity Space	1.43ha	2.8ha	4ha
Children's play space	0.08ha	0.2ha	2ha
Allotments	0.24ha	0.5ha	0
TOTAL		7.95ha	22.44ha

- 12.6.58 The development provides some 24.44ha of on-site open space of varying typology, which is well in excess of the policy requirement based on anticipated population increase. It is therefore considered that the development will have an overall **minor beneficial/negligible** long-term permanent effect on open space provision in the local area.
- 12.6.59 Specifically in terms of play space, with the addition of circa 383 children from the development, the existing play space at Anvil Way, Kentford at 0.01ha will be overstretched. However, the development will deliver circa 1.3ha of children's play space, which represents an 85% increase over the policy requirement. It is therefore considered that the development will have an overall **moderate /major beneficial (significant)**, long-term permanent effect on play provision at the local level.

Supplementary Mitigation

- 12.6.60 In terms of secondary education, it is anticipated that S106 contributions will be made to Suffolk County Council for the provision of the necessary spaces within an appropriate secondary school.

- 12.6.61 In terms of healthcare, it is anticipated that S106 financial contributions would be required to meet the additional demands on the primary healthcare service arising from the development.

Residual Effects

- 12.6.62 It is considered that the S106 contributions for secondary education will likely reduce the moderate adverse effect to an overall **minor/negligible adverse**, long-term, permanent effect at the local level.
- 12.6.63 In terms of healthcare, it is considered that the S106 contribution will likely reduce the major adverse effect to an overall **minor adverse**, long-term, permanent effect at the local level.

12.7 Cumulative Assessment of Effects, Mitigation and Residual Effects

- 12.7.1 Cumulative effects occur when a single receptor is affected by more than one effect at any one point in time. The following schemes have been identified and considered, in addition to the development, for the assessment of combined effect that they may have on West Suffolk:

Table 12.20: Cumulative Assessment Schemes

Planning Reference	Address	Development Summary	Status	Distance from Site
18/00752/ESO	Land Southwest of 98 To 138 Station Road Kennett	Known as Kennett Garden Village - Sustainable 'Garden Village' extension to Kennett - residential-led development with associated employment and community uses (including care home and/or sheltered housing) and a new primary school with a pre-school (nursery) facility, supporting infrastructure and open space/landscaping	Granted 15/4/2020 – under construction	2km north

DC/23/0864/FUL	Land At Former St Felix School Fordham Road Newmarket	a. 50 dwellings, garages, associated infrastructure including substation and foul water pumping station and public open space (following demolition of existing building and hard standing) b. new vehicular access onto Fordham Road following closure of existing southbound access c. re-location of tennis courts	Granted 18/7/24	5.8km west
DC/13/0408/OUT	Hatchfield Farm Fordham Road Newmarket	Residential development of up to 400 dwellings plus associated open space (including areas of habitat enhancement), foul and surface water infrastructure, two accesses onto the A142, internal footpaths, cycle routes and estate roads.	Granted on appeal 12 March 2020 – under construction	6km west

Site Enabling and Construction

Detailed Application (Eastern Parcel)

- 12.7.2 Development for the Detailed Application expected to start on site in 2026 and complete in 2030. All of the three cumulative schemes are already under construction, albeit, the two in West Suffolk are in the very early stages of this.

- 12.7.3 The construction periods of the schemes or some of the schemes are therefore likely to co-incide, at least for a couple of years. This will generate additional construction related employment within West Suffolk/East Cambridgeshire, although the actual scale of construction employment cannot be quantified due to the fact that information is commercially sensitive. Suffice it to say, that the cumulative effects on construction employment are likely to be **minor beneficial** long-term temporary effects.

Hybrid Application (Eastern Parcel and Western Parcel)

- 12.7.4 Development as a result of the Hybrid Application is expected to start onsite in circa 2026 and complete in 2032 which is likely to be over a longer period than the cumulative assessment schemes. Nonetheless, the principles identified for the Detailed Application above are still likely to create **minor beneficial to negligible** effects in terms of construction employment.

12.8 Cumulative Assessment of Effects, Mitigation and Residual Effects

Operation

Detailed Application (Eastern Parcel)

- 12.8.1 The three identified schemes together with the Detailed Application cumulatively are anticipated to deliver circa 1,251 dwellings, of which some 30% are affordable. Notwithstanding that KGV is just over the border in East Cambridgeshire, the overall effect of new dwellings, both market and affordable, in the immediate local area is considered to be a moderate beneficial (significant), long-term permanent effect.
- 12.8.2 All of the West Suffolk schemes and the Detailed Application must make necessary S106 contributions to health, pre-school, primary school and secondary school and other community facility provision, ie, planning policy will continue to ensure that there is sufficient investment into the necessary services and infrastructure to accommodate the demand of additional users. In this context, the cumulative effect on these social services/facilities is considered to be negligible.
- 12.8.3 The KGV is providing a primary school to serve its immediate needs, with respective financial contributions to East Cambridgeshire for secondary school requirements. The KGV development also includes the creation of a health centre potentially employing 2 new GPs.
- 12.8.4 Consequently, the cumulative effect of the KGV development on West Suffolk is considered to be negligible.
- 12.8.5 All four developments are required to, and will be providing, appropriate on-site open space. It is assessed that the cumulative effect of the open space provision in the local area will be permanent and **minor beneficial**.

Hybrid Application (Eastern and Western Parcel)

- 12.8.6 In terms of new job creation arising from the developments, only development as a result of the Hybrid Application provides any direct on-site employment. Multiplier effects of the other schemes will increase

direct job creation, but this is not quantifiable. There will therefore be an overall permanent negligible beneficial, long term cumulative effect on employment within the local area.

- 12.8.7 The cumulative schemes and Hybrid Application are expected to deliver circa 1,800 dwellings and a 90 bed care home, with associated 30% affordable dwellings. Thus, there will be an overall permanent moderate-minor beneficial, long term cumulative effect on housing within the local area.
- 12.8.8 Residents within the schemes will put additional demand on existing social infrastructure. Current provision would be inadequate to meet demands arising. However, given that two schemes are providing on-site primary school provision, one a health centre, together with S106 contributions, it is expected that this will ensure that there is sufficient investment in to the necessary services/facilities to accommodate the demand of the additional users.
- 12.8.9 The cumulative schemes are likely to have a **negligible** effect on social infrastructure provision.
- 12.8.10 Similarly, on-site provision of play space and open space within all of the schemes is likely to result in a **negligible- minor beneficial**, permanent effect.

12.9 Summary

- 12.9.1 The table below provides a summary of the likely effects of the Detailed Application and the Hybrid Application both during construction and operation, and cumulatively with the other identified projects

Table 12.21: Summary of Residual Effects for Detailed Application

Receptor	Potential Effects	Significance of Effects Prior to Mitigation	Additional Mitigation	Significance of Residual Effects
Construction				
Economy – local businesses	Generation of circa 1,548 net additional jobs over the four year period -	Moderate beneficial (significant) T/D & ID/MT	None required	Moderate beneficial (Significant) T/D & ID/MT
Operation				
Housing	Provision of 301 dwellings with 60 being affordable	Overall dwellings – Minor beneficial (not significant)	None required	Overall dwellings – Minor beneficial (not significant)

Receptor	Potential Effects	Significance of Effects Prior to Mitigation	Additional Mitigation	Significance of Residual Effects
		Affordable – Negligible (not significant) P/D/LT		Affordable – Negligible (not significant) P/D/LT
Primary Education	Circa 67 primary pupils generated by the, with no capacity in existing schools	Moderate adverse (significant) P/D/LT	S106 contributions towards other local schools	Minor adverse
Secondary Education	Circa 56 secondary/sixth form pupils generated with no capacity in local existing schools	Moderate adverse (significant) P/D/LT	S106 contributions towards local schools	Minor adverse
Healthcare	New population of circa 656 additional demand on GP practices creating a 17% increase in potential demand	Moderate-Minor adverse (not significant) P/D/LT	S 106 contributions towards local GP practices	Minor adverse (not significant) P/D/LT
Open Space - General	Increase in demand for open space. Provision of circa 2.68ha of new open space on -site against policy requirement of 2.76ha	Minor adverse (not significant) P/D/LT	None required	Minor adverse (not significant) P/D/LT
Open Space – children’s play	Increase in demand for play space. Provision of 0.39ha against policy	Minor beneficial (not significant) P/D/LT	None required	Minor beneficial (not significant) P/D/LT

Receptor	Potential Effects	Significance of Effects Prior to Mitigation	Additional Mitigation	Significance of Residual Effects
	requirement of 0.05ha			
CUMULATIVE				
Construction				
Economy – local businesses	Generation of local jobs		None required	Minor beneficial (not significant) T/D & ID/MT
Operation				
Housing	Creation of housing, including affordable towards local plan targets			Moderate beneficial (significant) P/D/LT
Primary Education	Increase in demand for school places		Some provision on site within some of the schemes and S106 contributions	Negligible P/D/LT
Secondary Education	Increase in demand for school places		S106 contributions	Negligible P/D/LT
Healthcare	Increase in demand for GP services		Some provision on site within some of the schemes and S106 contributions	Negligible P/D/LT
Open Space	Increase in demand for open space		Provision within each scheme	Negligible P/D/LT

Key to table: P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term, N/A = Not Applicable

Table 12.22: Summary of Residual Effects for Hybrid Application

Receptor	Potential Effects	Significance of Effects Prior to Mitigation	Additional Mitigation	Significance of Residual Effects
Construction				
Economy – local businesses	Generation of circa 5,022 net additional jobs over the six year period -	Major beneficial (significant) T/D & ID/MT	None required	Major beneficial (Significant) T/D & ID/MT
Operation				
Economy -job creation	Development creates circa 112 additional jobs	Minor beneficial (not significant) P/D/LT	None required	Minor beneficial (not significant) P/D/LT
Housing	Provision of 860 dwellings with xx being affordable and a 90 bed care home for elderly	Overall dwellings – Moderate beneficial (significant) Affordable – Minor beneficial (not significant) P/D/LT	None required	Overall dwellings – Moderate beneficial (significant) Affordable – Minor beneficial(not significant) P/D/LT
Primary Education	Circa 206 primary pupils generated by the development, with provision of 1 FE school on -site	Negligible (not significant) P/D/LT	None required	Negligible (not significant) P/D/LT
Secondary Education	Circa 177 secondary/sixth form pupils generated with no capacity in local existing schools	Major adverse (significant) P/D/LT	S106 contributions towards local schools	Minor adverse/negligible (not significant) P/D/LT
Healthcare	New population of circa 1,950 additional demand on GP practices creating a 38% increase in potential demand	Major adverse (significant) P/D/LT	S 106 contributions towards local GP practices	Minor adverse (not significant) P/D/LT
Open Space - General	Increase in demand for open space. Provision of circa 9.45ha of new open space on -site against policy requirement of 7.95ha	Minor beneficial (not significant) P/D/LT	None required	Minor beneneficial (not significant) P/D/LT

Receptor	Potential Effects	Significance of Effects Prior to Mitigation	Additional Mitigation	Significance of Residual Effects
Open Space – children's play	Increase in demand for play space. Provision of 1.3ha against policy requirement of 0.2ha	Moderate-major beneficial (significant) P/D/LT	None required	Moderate-major beneficial (significant) P/D/LT
CUMULATIVE				
Construction				
Economy – local businesses	Generation of local jobs			Minor beneficial - negligible(not significant) T/D & ID/MT
Operation				
Economy	Creation of on-site jobs			Negligible P/D/LT
Housing	Creation of housing, including affordable towards local plan targets			Moderate -minor beneficial (significant) P/D/LT
Primary Education	Increase in demand for school places		Some provision on site within some of the schemes and S106 contributions	Negligible P/D/LT
Secondary Education	Increase in demand for school places		S106 contributions	Negligible P/D/LT
Healthcare	Increase in demand for GP services		Some provision on site within some of the schemes and S106 contributions	Negligible P/D/LT
Open Space	Increase in demand for open space		Provision within each scheme	Negligible- minor beneficial (not significant) P/D/LT

13.0 TRANSPORT

13.1 Introduction

- 13.1.1 This Chapter reports the assessment of the likely significant environmental effects of the Applications with respect to Transportation. It describes the methods used to assess the effects; the baseline conditions currently existing at the Sites and surrounding area; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.
- 13.1.2 The assessment takes into account current legislation, policy and technical guidance.
- 13.1.3 This Chapter has been prepared by RPS on behalf of Lochailort Kentford Ltd. The Chapter considers the environmental effects of road traffic and transportation generated by the development on the study area provided at **Appendix 13.1**.
- 13.1.4 The Chapter describes:
- the assessment methodology;
 - the baseline conditions currently existing at the Sites and in the surrounding area;
 - the likely significant environmental effects;
 - the mitigation measures required to prevent, reduce or offset any significant adverse effects;
 - the likely residual effects after these measures have been employed; and
 - the 'Type 2' cumulative ('inter-project') effects associated with the Proposed Site in combination with other identified committed developments.
- 13.1.5 In particular, this Chapter considers the likely environmental effects on the highway network in terms of severance of communities, road vehicle driver and passenger delay, non-motorised user delay, non-motorised amenity, fear and intimidation on and by road users, road user and pedestrian safety and hazardous/large loads as a result of the changes to traffic flows from the development. It addresses the impact of the development for each of the potential parameters and assesses the impact on identified sensitive receptors.
- 13.1.6 The data provided within this Chapter is not reliant on data provided within other Chapters of this ES, however the data within this Chapter is used in the assessments of Air Quality and Noise provided in **Chapters 9 and 11** respectively.
- 13.1.7 An outline of transport-related policies and guidance is also provided, together with the methodology used in this assessment. The assessment sets out the existing baseline conditions on the transport network surrounding the Site, the future baseline (where different), and then considers the likely impact of the development on the transport network.

13.1.8 This Environmental Statement (ES) will cover two planning applications. These are as follows:

- **Detailed Application (Eastern Parcel), and**
- **Hybrid Application (Eastern and Western Parcel)**

13.2 Appendices

Table 13.1 Appendices for Chapter 13

Appendix No.	Document
13.1	Proposed Study Area
13.2	Collision Data

13.3 Legislation, Policy and Guidance

National Policy

National Planning Policy Framework ⁵¹

13.3.1 The National Planning Policy Framework (NPPF) was updated on 12 December 2024.

13.3.2 The NPPF sets out the Government’s planning policies for England and how these should be applied. The key driver is achieving sustainable development with economic, social, and environmental objectives – with a presumption in favour of sustainable development. (para. 12)

13.3.3 The NPPF further sets out several transport objectives designed to facilitate sustainable development and contribute to wider sustainability by giving people greater choice about how they travel, detailed most notably within Section 9 ‘Promoting Sustainable Transport’:

13.3.4 Paragraph 115 states:

“In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

sustainable transport modes are prioritised taking account of the vision for the site, the type of development and its location;

safe and suitable access to the site can be achieved for all users;

⁵¹ [National Planning Policy Framework](#)

the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and

any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree through a vision-led approach.”

13.3.5 Paragraph 116 continues that:

“Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.”

13.3.6 Paragraph 117 outlines the necessity for development applications to:

“give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;

address the needs of people with disabilities and reduced mobility in relation to all modes of transport;

create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;

allow for the efficient delivery of goods, and access by service and emergency vehicles; and

be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations”.

13.3.7 Finally, Paragraph 118 covers the need for Travel Plans and Transport Statements / Assessments for all developments which generate significant amounts of movement

Local Policy

Suffolk County Council Local Transport Plan 2025-2040⁵²

- 13.3.8 SCC's Local Transport Plan (LTP) released in draft in 2025 states the following regarding the purpose of the LTP document:

"Our Local Transport Plan presents our vision for transport in Suffolk, highlighting the challenges and opportunities and the measures available to respond to them.

Every Local Transport Authority must produce and adopt a Local Transport Plan. This is the fourth for Suffolk, which moves forward our Local Transport Plan 2011 to 2031.

Our Local Transport Plan develops further the long-term vision and provides a set of objectives that will inform transport policy and investment decisions in Suffolk up to 2040. Our Local Transport Plan provides essential policy direction that informs local planning authorities' Local Plans for growth and development."

- 13.3.9 The document contains several goals for the region and provides the following vision:

"In 2040, Suffolk's transport emissions will have reached net zero because a connected and integrated network of sustainable transport solutions will have boosted economic growth and opportunities for us and our businesses. We will be healthier, happier, and our quality of life will be significantly improved through place-based enhancements that are designed to enable us to thrive."

- 13.3.10 The document outlines the following four priority themes:

- Decarbonisation of transport
- A strong, sustainable and fair economy
- Health, wellbeing, and social inclusion
- Creating better places

- 13.3.11 The document also highlights its commitments to the five pillars of Road Safety, which are:

- Safer Roads & Roadsides
- Safer Road Users
- Safer Speeds

⁵² <https://www.suffolk.gov.uk/asset-library/local-transport-plan-2025-2040.pdf>

- Safer Vehicles
- Post-Crash Response

13.3.12 The document also outlines the following regarding transport plans for local areas of Suffolk:

“Area transport plans for Suffolk’s fifteen main towns provide a greater degree of detail for transport improvements in their respective areas and deliver projects contributing to our Local Transport Plan themes.”

West Suffolk Local Plan⁵³

13.3.13 WSC are in the process of preparing the ‘West Suffolk Local Plan 2040’ and have released the draft document, which is under Regulation 19, submitted in January 2024. While the document is not yet fully adopted, the policies highlighted within the document have been considered where appropriate.

13.3.14 Policy LP57 of the Draft West Suffolk Local Plan addresses ‘active and sustainable travel’. The purpose of this policy is to ‘ensure that high quality walking and cycle infrastructure is delivered by new development to significantly increase the number of trips that are carried out by sustainable modes of travel’. The policy reads:

“Proposals for development must provide for active travel on and off site by:

a. Maximising walking opportunities for all levels of personal mobility and contributing to a positive public realm. Proposals must maintain, improve and create new safe and attractive routes suitable for pedestrians, push chairs and wheelchairs including appropriate street furniture such as seating and lighting as necessary.

b. Promoting opportunities for an accessible, safe, and segregated cycle network, including protecting existing routes, and providing appropriate facilities for the use of cyclists. Cycle infrastructure should be built to the requirements of Gear Change and Cycle Infrastructure Design Local Transport Note 1/20 and related guidance or successor documents.

c. All destinations, transport hubs and commercial, business and service premises are required to having facilities to allow people to cycle all year around including, but not limited to, workplace showers, covered cycle storage, changing rooms, drying rooms and lockers provided, with opportunities for the hire of bicycles, e-bikes and e-scooters as appropriate to the use and scale of the proposal.

⁵³ [West Suffolk Local Plan Submission Draft \(Regulation 19\) 2024 - West Suffolk Local Plan \(Regulation 19\) Submission Draft January 2024 - West Suffolk Planning Policy Consultations](#)

d. Provide sufficient, secure, convenient and accessible undercover cycle spaces for a range of bicycles and installing and maintaining secure, undercover cycle parking spaces in line with Suffolk Guidance for Parking 2023 or successor document.

e. Ensuring new or improved sustainable links both within the site and to local destinations are provided to enhance access within the settlement, between settlements and/or provide access to the countryside or green infrastructure sites, local facilities, services, and other destinations as appropriate.

f. Improvements to public transport infrastructure through upgrading bus and/or rail links, providing well-designed facilities, passenger information infrastructure, protection and enhancement of public transport routes, bus stops, provision of shelters and by appropriate contributions as necessary.

g. Safe and suitable access to public transport through direct provision of suitable infrastructure.

Financial contributions will be required, appropriate to the scale of the development, towards the delivery of improvements to transport infrastructure which includes facilitation or improvements to access for sustainable modes of transport."

13.3.15 Policy LP59 of the Draft Local Plan addresses 'Transport assessments, transport statements and travel plans', the purpose of Policy LP59 is to 'ensure major development proposals or applications likely to have a significant transport implication, submit relevant documents considering the transport impacts alongside their planning applications.' The policy reads as follows:

"For major development and/or where a proposal is likely to have significant or complex transport implications, the council requires the applicant to submit the following documents alongside their planning applications:

a. A multi modal transport assessment or transport statement appropriate to the scale and impacts of development identifying the likely extent of transport implications and proposed mitigation measures.

b. A travel plan that outlines physical and management measures necessary to mitigate impacts and deliver a sustainable transport solution for the development. The developer will be required to provide the necessary funding to deliver and monitor any required travel plan for at least 10 years from first occupation.

Where a transport assessment, transport statement and/or travel plan indicates that the cumulative and residual travel impacts on the road network and other routes arising from the development would be severe, or there would be an unacceptable impact on highway safety, then planning permission will not normally be granted.

Where it is necessary to mitigate and accommodate the transport impacts of development, developers will be required to make provision or a financial contribution, appropriate to the scale of the development, towards the delivery of improvements to transport infrastructure which includes facilitation or improvements to access for sustainable modes of transport.”

13.3.16 Policy LP60 of the Draft Local Plan address parking standards. It reads as follows:

“All proposals for development, including changes of use, will be required to provide appropriately designed and sited car parking and secure cycle storage and where necessary two-wheeler parking. Provision should be made for visitor, emergency, delivery, service, and disabled vehicle parking. All proposals must be in accordance with the adopted standards (Suffolk Guidance for Parking 2023 and successor documents).

The council will seek to reduce over-reliance on the car and to promote more sustainable forms of transport. Provision should have regard to the accessibility of the site to sustainable transport modes with consideration for the need to decarbonise.

In the town centres and other locations with good accessibility to facilities and services, and/or well served by public transport, a reduced level of car parking may be permitted in new development proposals where it is demonstrated there are appropriate sustainable transport measures and no cumulative harm to the highway network.”

Forest Heath and St Edmundsbury Local Plan – Joint Development Management Policies (2015)⁵⁴

13.3.17 The Local Plans for Forest Heath and St Edmundsbury are the policy backgrounds against which planning decisions and other decisions dealing with physical and environmental change in each authority area are judged. These plans will be incorporated into the future West Suffolk Local Plan mentioned above.

13.3.18 This plan was adopted by the former St Edmundsbury Borough Council on 24 February 2015 and the former Forest Heath District Council on 27 February 2015. The document details policies related to sustainable growth, housing, horse-racing, and transport.

13.3.19 Policy DM45 outlines requirements for Transport Assessments, noting that:

“For major development and/or where a proposal is likely to have significant transport implications, the Council requires the applicant to submit the following documents alongside their planning applications:

⁵⁴ https://www.westsuffolk.gov.uk/planning/Planning_Policies/local_plans/upload/JDMPD-FINAL-for-website-error-amended.pdf

a Transport Assessment appropriate to the scale of development and the likely extent of transport implications;*

a Travel Plan that identifies the physical and management measures necessary to address the transport implications arising from development.

Where a Transport Assessment and/or Travel Plan does not demonstrate that the travel impacts arising from the development will be satisfactorily mitigated or that adequate measures are in place to promote the use of more sustainable modes of transport, then planning permission will not be granted. The developer will be expected to provide the necessary funding to deliver any travel plan agreed in writing with the local planning authority.

Where it is necessary to negate the transport impacts of development, developers will be required to make a financial contribution, appropriate to the scale of the development, towards the delivery of improvements to transport infrastructure or to facilitate access to more sustainable modes of transport.”

13.3.20 Policy DM46 “Parking Standards” states that:

“The authority will seek to reduce over-reliance on the car and to promote more sustainable forms of transport. All proposals for redevelopment, including changes of use, will be required to provide appropriately designed and sited car and cycle parking, plus make provision for emergency, delivery and service vehicles, in accordance with the adopted standards current at the time of the application.”

13.4 Technical Standards and Guidance

13.4.1 This assessment has been undertaken in accordance with guidance given in the following documents:

- Institute of Environmental Management and Assessment (IEMA) Guidelines: Environmental Assessment of Traffic and Movement (July 2023)⁵⁵; and
- Design Manual for Roads and Bridges (DMRB) LA 104, Environmental Assessment and Monitoring⁵⁶.

13.5 Historic Assessment

13.5.1 There has been no historic assessment carried out at the site. The site was previously occupied by the Animal Health Trust which ceased operating in 2020.

⁵⁵ [iema-report-environmental-assessment-of-traffic-and-movement-rev07-july-2023.pdf](#)

⁵⁶ [LA 104 - Environmental assessment and monitoring](#)

13.6 Assessment Methodology and Significance Criteria

Relevant Elements to be Assessed

- 13.6.1 With respect to this chapter, the relevant elements to be assessed are vehicle trips generated by the various uses that will use the highway network in the vicinity. The majority of the assessment comprises the prediction of vehicle movements onto links within the study network and the assessment of the impacts of these movements.

Scope of the Assessment

- 13.6.2 The study area was chosen by understanding the flows on the local road network, the percentage change of the local junctions was calculated to understand which junctions should be assessed further. This produces the geographic extent of assessment. The areas of impact under consideration are as set out in the IEMA guidance.

Extent of the Study Area

- 13.6.3 The extent of the study area can be found in **Appendix 13.1**.

Consultation

- 13.6.4 Pre application advice was sought from Suffolk County Council (SCC) submitted 23 January 2025, with a response received 11 April 2025. The responses have informed the preparation of the Transport Assessments and this chapter. The preparation of this chapter and the respective Transport Assessments for the two applications were also informed by issues raised during public engagement and discussions with the British Horse Society.

Method of Baseline Data Collation

- 13.6.5 Various sources have been used to understand traffic flows in the area. Historic data that has been sourced from National Highways and Department for Transport, this data has come from open-source data made available for the public.
- 13.6.6 The main source of data is from surveys carried out by 'Intelligent Data' covering the last week of April into the first week of May 2024. The surveys have been commissioned by RPS throughout the local highway network within the proximity of the site. The surveys commissioned include Automatic Traffic Counters (ATC) and peak hour turning movement counts (MCC). The ATC surveys were conducted over a one-week period, identifying the number and type of vehicles as well as their speeds. The ATC (24/04/24 – 02/05/24) and MCC surveys (25th April 2024) were undertaken at the following locations and junctions:

MCC

- B1506 / Sire Lane T-Junction;
- Station Road / B1506 / Moulton Road 4-Arm Junction;
- Norwich Road / B1506 / School Road 4-Arm Junction; and
- A1304 / B1506 T-Junction

ATC

- B1506 at a location between Sir Graham Kirkham Avenue (east) and School Road (west)

Identification of Sensitive Receptors

- 13.6.7 The IEMA Guidelines outlined in the Methodology section indicates that a 30% increase in traffic flow represents a reasonable threshold for including highway links in the assessment process. However, a lower threshold may be appropriate where there are higher HGV flows. Additionally, it suggests that other particularly sensitive areas should be included if traffic flows have increased by 10% or more. These sensitive areas may include accident black spots or links with high pedestrian activity and links near to educational facilities.
- 13.6.8 For this assessment, the effects of the each application will be evaluated on the links presented in **Table 13.2**, below. The changes in traffic composition and volume will be assessed in relation to the significance criteria. The links and junctions are shown on the plan provided as **Appendix 13.1**.

Table 13.2: Assessment Links

Link I	Road Link	Location
1	Sire Lane	
2	B1506	(West of Sire Lane)
3	B1506	(East of Sire Lane)
4	Station Road	
5	B1506	(West of Moulton Rd)
6	Moulton Road	
7	Bury Road B1506	
8	Norwich Road	
9	B1506	(East Norwich Rd)
10	School Road	

11	B1506 Well Bottom	(West Norwich Rd)
12	A1304	(NE Well Bottom)
13	Well Bottom B1506	(NE A1304)
14	A1304	(SW Well Bottom)
15	B1506	(W Sir Graham Kirkham Av)
16	A14	Near Kennett Train Station
17	A14	Near J38 (Waterhall Interchange)
18	Bury Road B1506	Near Bedford Lodge Hotel
19	A14	Near Phoenix Bike Park
20	Site Access 1	
21	Site Access 2	
22	Sir Graham Kirkham Avenue	
23	Link Road	

13.6.9 Tables 13.3 below shows the sensitive receptors, it should be noted that in Detailed Application link 20, 'Site Access 1', link 21 'Site Access 2' and link 23 'Link Road' are not present, this should be considered throughout.

Table 13.3: Sensitivity of Receptors

Link ID	Road Link	Location	Sensitive to Change	Reason
1	Sire Lane		Yes	People at home. People walking. People cycling.
2	B1506	(West of Sire Lane)	No	No current frontage development or other uses to be affected.
3	B1506	(East of Sire Lane)	Yes	People at home. People in workplaces. People walking. People cycling.

4	Station Road		Yes	People at home. People in workplaces. People walking. People cycling.
5	B1506	(West of Moulton Rd)	Yes	People at home. People in workplaces. People walking. People cycling.
6	Moulton Road		Yes	People at home. People in workplaces. People walking. People cycling.
7	Bury Road B1506		Yes	People at home. People in workplaces. People walking. People cycling.
8	Norwich Road		No	No current frontage development or other uses to be affected.
9	B1506	(East Norwich Rd)	No	No current frontage development or other uses to be affected.
10	School Road		No	No current frontage development or other uses to be affected.
11	B1506 Well Bottom	(West Norwich Rd)	No	No current frontage development or other uses to be affected.
12	A1304	(NE Well Bottom)	No	No current frontage development or other uses to be affected.
13	Well Bottom B1506	(NE A1304)	No	No current frontage development or other uses to be affected.
14	A1304	(SW Well Bottom)	Yes	People at home. People walking. People cycling. Racehorses.
15	B1506	(W Sir Graham	Yes	People at home. People walking. People cycling.

		Kirkham Av)		
16	A14	Near Kennett Train Station	No	Trunk Road
17	A14	Near J38 (Waterhall Interchange)	No	Trunk Road
18	Bury Road B1506	Near Bedford Lodge Hotel	Yes	People at home. People walking. People cycling. Racehorses.
19	A14	Near Phoenix Bike Park	No	Trunk Road
20	Site Access 1		No	Proposed road
21	Site Access 2		No	Proposed road
22	Sir Graham Kirkham Avenue		No	Currently closed
23	Link Road		No	Proposed road

13.6.10 As can be seen above, of the 26 links, 9 have been identified as sensitive links, mainly due to IEMA 'Affected Parties', which include residential areas and the presence of pedestrian / cyclists.

13.6.11 Consistent significance criteria are utilised across this Environmental Statement, with the level of significance aligned with the DMRB guidelines LA 104 ⁵⁷, titled 'Environment assessment and monitoring'

⁵⁷ [LA 104 revision 1 Environmental assessment and monitoring-web.pdf](#)

which evaluates the development's impact on a scale ranging from Major, Moderate, Minor, Negligible and No Change. These criteria, in conjunction with the assessment of effect magnitude and receptor sensitivity, will be employed to ascertain the significance of effects.

Assessment Modelling

- 13.6.12 Future year assessments have been undertaken for 2029 as the opening year for the Detailed Application and 2031 as the opening year of Hybrid Application.
- 13.6.13 To represent robust assessments, the completed development traffic has been added in the opening years as this presents the highest percentage change.
- 13.6.14 In establishing a future baseline, consideration has been given to traffic movements associated with committed developments.
- 13.6.15 Future scenario background growth has been applied using the TEMPRO (version 8.1) database which identifies an average of 4% growth (averaging Weekday AM and PM Peak Periods) between 2024 – 2029. TEMPRO includes growth in housing and employment within its assumptions and is considered to take into account the committed developments within the draft Local Plan and further afield. A similar approach has been taken to the 2031 assessment year.
- 13.6.16 Kennett Garden Village has been included as a specific committed development as defines flows are within the submitted transport assessment within the study area. The Hatchfield Farm and St Felix School committed developments are sufficiently far away that specific traffic movements are not considered to affect the study area.
- 13.6.17 The traffic flows for the 2029 future baseline scenarios on the highway network in the vicinity of the site are shown in Table 13.4.

Table 13.4: 2029 Without Development

Link ID	Link Name	Speed Limit (mph)	18 hour 2-way all vehicle flow	24 hour 2-way all vehicle flow	18 hour >3.5T (HGV's)	24 hour >3.5T (HGV's)
1	Sire Lane	30	305	338	0	0
2	B1506	40	6702	7418	193	214
3	B1506	40	6708	7425	193	214
4	Station Road	40	5603	6202	0	0
5	B1506	30	9906	10965	193	214

6	Moulton Road	30	3492	3866	50	55
7	Bury Road B1506	30	7738	8565	206	228
8	Norwich Road	60	1484	1642	87	97
9	B1506	60	6683	7398	175	193
10	School Road	60	991	1097	19	21
11	B1506 Well Bottom	60	6029	6673	106	117
12	A1304	30	7543	8327	125	138
13	Well Bottom B1506	30	6322	6997	100	110
14	A1304	30	13634	15201	200	221
15	B1506	60	6908	7646	324	359
16	A14	70	34199	36714	5102	5477
17	A14	70	53062	56964	7735	8304
18	Bury Road B1506	30	11707	12958	218	242
19	A14	70	33169	36714	4948	5477
20	Site Access 1	30	0	0	0	0
21	Site Access 2	30	0	0	0	0
22	Sir Graham Kirkham Avenue	30	0	0	0	0
23	Link Road	30	0	0	0	0

Significance Criteria

- 13.6.18 Consistent significance criteria are utilised across this Environmental Statement, with the level of significance aligned with the DMRB guidelines LA 104 ⁵⁸ titled 'Environment assessment and monitoring' which evaluates the development's impact on a scale ranging from Major, Moderate, Minor, Negligible and No Change. These criteria, in conjunction with the assessment of effect magnitude and receptor sensitivity, will be employed to ascertain the significance of effects.

Significance of Effects

- 13.6.19 The significance of potential traffic and transport effects will be determined with reference to the above guidelines. The significance of the effect will be derived from measures of the magnitude (or scale) of the change and the sensitivity (or importance) of the receptors affected. Categories of sensitivity and magnitude are defined to determine the significance of the effect.
- 13.6.20 The IEMA Guidelines lists a number of environmental impacts, of which the following are assessed in this Chapter:
1. Severance of communities;
 2. Road vehicle driver and passenger delay;
 3. Non-motorised user delay;
 4. Non-motorised amenity;
 5. Fear and intimidation on and by road users; and
 6. Road user and pedestrian safety.
- 13.6.21 These are explained in greater detail throughout this Chapter. Due to the type of development, hazardous / large loads are not considered.
- 13.6.22 In terms of the assessment of transport related effects, the IEMA under 'Affected Parties' and include the following as sensitive receptors:
1. People at home;
 2. People in workplaces;
 3. Sensitive of vulnerable groups, including children, the elderly, and the disabled;
 4. Sensitive locations, such as hospitals, churches, schools, and historical buildings;

⁵⁸ [LA 104 revision 1 Environmental assessment and monitoring-web.pdf](#)

5. People walking;
6. People cycling;
7. Open spaces, recreational sites, and shopping areas;
8. Sites of ecological or nature conservation value; and
9. Collision clusters and routes with road safety issues.

Limitations and Assumptions

- 13.6.23 Traffic surveys form the basis of the assessment which have natural limitations due to their nature as a snapshot. To mitigate the limitations of individual junction surveys, they were undertaken in a neutral period (not school holidays) and avoid Monday and Friday which can have a different profile of trips to the central portion of the week. Best practice has been used to predict future trips from the Site.

13.7 Baseline Conditions

The Site and Topography

- 13.7.1 The Detailed Application Site is 16.54ha and comprises the eastern portion of the Former Animal Trust site from the boundary with residential dwellings along Jeddah Way to the east and Lanwades Hall to the west. The Hybrid Application Site is 48.55ha in size, the site is bound by the B1506 and Cambridgeshire to the north, existing residential dwellings along Jeddah Way to the east, existing woodland to the south, and School Road to the west.
- 13.7.2 To the north of the site, north of the A14, is the 'Kennett Garden Village' development, located to the north of Kennett Rail Station along Station Road.
- 13.7.3 The location of the site is shown below in Figure 13.1. This figure provides an approximate indication of the size and position of Detailed Application (blue) site and Hybrid Application (green) site. It is important to note that the Hybrid Application Site includes the whole of Detailed Application Site as highlighted below.

Figure 13.1: Site Location



Existing Highway Network

B1506

- 13.7.4 The B1506 forms the northern boundary of the site and is a single carriageway subject to a signed 40mph speed limit near the site. Approaching Kentford, this speed limit drops to 30mph east of Sir Graham Kirkham Avenue. Approaching Newmarket, the speed limit increases to national speed limit (60mph) west of School Road. The B1506 provides footways to the south of the carriageway, has clear road markings, and is street lit at regular intervals. The B1506 is a key route to the east towards Kentford and Bury St Edmunds via A14, and to the west towards Newmarket. It links to Sir Graham Kirkham Avenue and Sire Lane which both provide access to the site.

Sire Graham Kirkham Avenue

- 13.7.5 Sir Graham Kirkham Avenue is a private road comprising of a circa 6-7m wide single carriageway subject to a signed 20 mph speed limit. This provides for vehicle and pedestrian site access via B1506. The B1506 at the access point is a 40mph limit with derestricted speed limit approximately 85m to the west. The access has a ghost-island right turn lane without any islands. For 40mph, a 120m visibility splay is required for a priority access. The access junction appears to have ample visibility. The kerb radii are large and have clearly been used by large vehicles as part of the previous site use, including horse boxes which was appropriate for the site given its operation.

Sire Lane

- 13.7.6 Sire Lane is a privately maintained 5.5m wide single carriageway, which currently provides secondary access to the site. This access provides footways to the east of the carriageway and is street lit at regular intervals. This access is shared with a residential development (Larnach Drive) to the east serving 38 dwellings. Sire Lane also has a ghost-island right turn lane from the B1506.

Station Road

- 13.7.7 Station Road is a single carriageway road running north from the B1506 at Kentford to Dane Hill Road in Kennett. Carriageway width varies between approximately 6 and 7m along the length of the road, and a footway of variable width between 1.2 – 1.8m runs along the eastern side. The speed limit along Station Road begins as 40mph at its junction with the B1506 in Kentford and changes to 30mph near Kennett.
- 13.7.8 A permanent three-tonne weight restriction enforced by CCC exists on the bridged portion of the road

Moulton Road

- 13.7.9 Moulton Road forms the southern arm of the B1506 / Station Road crossroads junction. It is a single carriageway road approximately 5m in width that connects the B1506 with Chippenham Road / School Road to the south. The road is subject to a 30mph speed limit near the B1506 and the national speed limit from approximately 600m south of the B1506 / Station Road crossroads to the south. Lighting is mostly absent along the length of the road.

School Lane

- 13.7.10 As a narrow single carriageway of approximately 4.5-metres width, School Road forms the southern arm of the B1506 / Norwich Road / School Road priority crossroads and connects to Moulton Road to the south. Vehicle overrun into the grass is present on both sides of the road. Like Moulton Road, School Road is subject to a 30mph speed limit for a portion nearest its end junctions, with the rest subject to the national speed limit. Lighting is also mostly absent.

Norwich Road

- 13.7.11 Forming the northern arm of the B1506 / Norwich Road / School Road priority crossroads junction, Norwich Road connects the B1506 with the A11 and maintains an approximate width of between 5-5.5m. Norwich Road connects to the A11 via a left-in, left-out configuration and lighting is mostly absent along the length of the road.

Walking Routes

B1506

- 13.7.12 The B1506 forms the main route between the Site and Kentford village centre. The footway along the southern edge of the B1506 as it forms the northern boundary of the Site is approximately 1.5m in width. The footway runs the length of the road from the B1506 / Station Road junction before terminating to the west at the laybys approximately 425m east of the B1506 / Norwich Road / School Road priority crossroads junction.
- 13.7.13 The footways along the B1506 are accompanied by dropped kerbs at most crossings and street lighting is present for a segment along the B1506 east of the main access to the former AHT site, Sir Graham Kirkham Avenue. No dropped kerbs are present across the Lanwades Business Park access.
- 13.7.14 As the B1506 footway continues east from the Site, it crosses Moulton Road without dropped kerbs before switching over to the northern side of the B1506 near The Bell Inn pub (with dropped kerbs and tactile paving). The footway widens to approximately 2m wide and follows the B1506 further east. This segment is mostly street-lit.
- 13.7.15 Approximately 250m east of the B1506 / Station Road crossroads, the northern edge footway meets a Zebra crossing, and the footway continues along both sides of the B1506.
- 13.7.16 As both footways continue through Kentford and towards the junction of the B1506 / Herringswell Road, the southern footway narrows to approximately 1m.
- 13.7.17 As the footways continue east, street lighting becomes more present, and the northern edge footway widens to approximately 3m as it approaches the B1506 / Herringswell Road junction. The southern edge footway maintains a width of approximately 2m.
- 13.7.18 A second Zebra crossing along the B1506 is located approximately 50m west of the B1506 / Herringswell Road junction.
- 13.7.19 At the junction of the B1506 / Herringswell Road, the northern footway crosses Herringswell Road via dropped kerbs and tactile paving. The southern footway crosses Gazeley Road and is also accompanied by dropped kerbs. Both footways continue east along the B1506; the southern footway terminates approximately 260m east from the B1506 / Herringswell Road junction whilst the northern footway continues and narrows to approximately 1m, before widening again near Flint Cottages (near Phoenix Bike Park).

B1506/Station Road Junction

- 13.7.20 As the B1506 footway approaches the B1506 / Station Road crossroads junction, it crosses the southern Moulton Road arm and is not accompanied by dropped kerbs.

- 13.7.21 From the junction's western B1506 arm, pedestrians travelling on the southern footway can either continue straight across Moulton Road and cross over to the north side of the B1506 after The Bell Inn pub, head south along Moulton Road, or cross both Moulton Road and B1506 to continue north towards Kennett Station along Station Road. However, it is likely that most pedestrians crossing from the western B1506 arm of the junction to head north along Station Road will follow a desire line that crosses the junction diagonally.

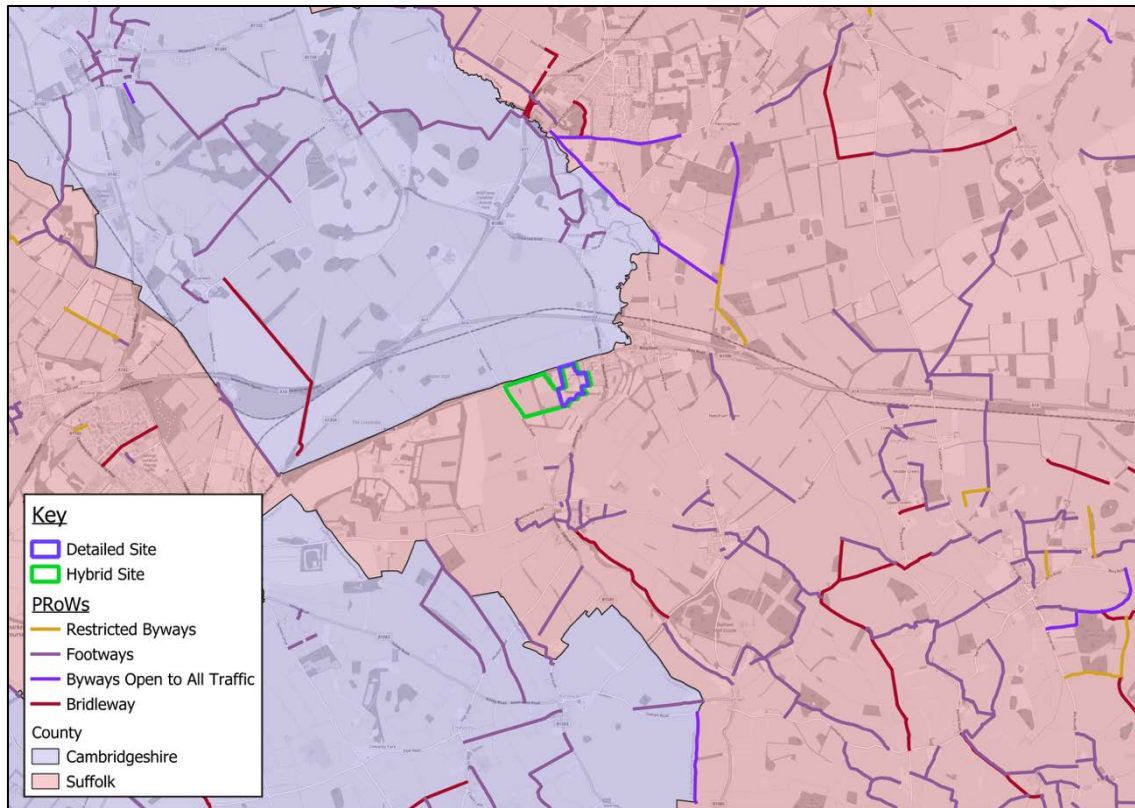
B1506 / Herringswell Road Junction

- 13.7.22 Where the B1506 footways moving east from the B1506 / Station Road junction meet the B1506 / Herringswell Road junction, the northern footway crosses Herringswell Road via dropped kerbs and tactile paving. The southern footway crosses Gazeley Road via dropped kerbs. While there are no crossing facilities on the eastern arm of the junction, the Zebra crossing along the B1506 to the west of the junction provides a facility for pedestrians to cross to the northern footway.

Public Right of Way

- 13.7.23 As the site falls near SCC's boundary with CCC, public rights of way within CCC were also examined. The closest available PRow is approximately 1km to the south, provided access into Moulton. Public Rights of Way can be found in Figure 13.2 below.

Figure 13.2: Public Rights of Way



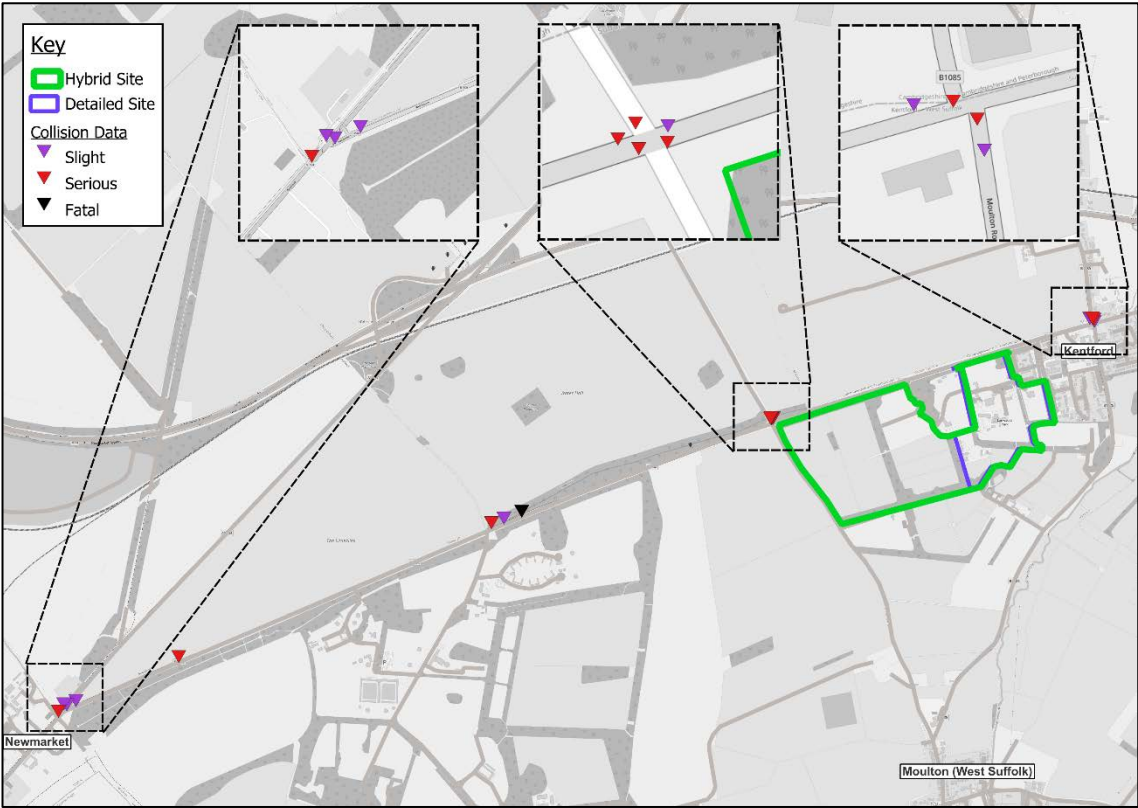
Cycling Routes

- 13.7.24 The existing environment within and around Kentford caters largely to experienced cyclists who are likely to be commuting further afield or through Kentford, as the cycle network is shared with vehicles on the local road network.
- 13.7.25 The Sustrans National Cycle Route 51 ('NCR 51') passes through Moulton approximately 1.5km south of the Site (approx. 10-minute cycle). It connects Oxford and Colchester via Newmarket and Bury St Edmunds, the route is on-road between Newmarket and Bury St Edmunds, but away from busy traffic routes.

Accidents and Safety

- 13.7.26 A review has been undertaken of road traffic collision data involving personal injury that have occurred on the road network in the within the study area over a five-year period. Collision data has been obtained from CrashmapPro for the period December 2019 to December 2023. A copy of this data is provided at **Appendix 13.2**.
- 13.7.27 The location plots and detailed records of each collision can be found in below in Figure 13.3.

Figure 13.3: Collision Data Map



13.7.28 A total of 17 collisions occurred on the studied areas of the local highway network within the five-year study period. A brief overview of each collision is provided at Table 13.5

Table 13.5: Collision Data

Location	Data/ Time	Severity	Conditions	Summary / Causation Factor
A1304 / B1506	Wednesday 05 May 2021 07:50	Slight	Wet carriageway / Daylight	A motorcyclist and car driver collided whilst the car driver was changing lane to the right. Occurred on the B1506 arm of the signal junction. Motorcyclist sustained a slight injury.
A1304 / B1506	Monday 17 Oct 2022 17:07	Serious	Dry carriageway / Daylight	A car driver and pedal cyclist collided whilst the car driver was attempting to pass on the cars offside. Pedal cyclist sustained a serious injury.

A1304 / B1506	Thursday 30 May 2019	Slight	Dry carriageway / Daylight	No further details
A1304 / B1506	Thursday 20 July 2023	Slight	Wet Carriageway / Darkness	No further details
B1506	Monday 06 November 2023	Slight	Dry Carriageway / Darkness	No further details
B1506	Tuesday 19 Dec 2023	Fatal	Wet Carriageway / Darkness	No further details
B1506	Sunday 04 July 2021	Serious	Dry Carriageway / Darkness	No further details
B1506	Monday 17 Oct 2022	Serious	Dry carriageway / Daylight	No further details
B1506 / Station Road	Friday 16 July 2021 07:56	Slight	Dry carriageway / Daylight	A van driver and car driver collided whilst the van driver was moving off. Near side of the car collided with the front side of the van. The car driver sustained a slight injury.
B1506 / Station Road	Sunday 03 Oct 2021 03:50	Serious	Dry carriageway / Darkness	Two car drivers collided, with the near side of both cars colliding. One passenger in each of the vehicles sustained an injury, with one sustaining a serious and the other sustaining a slight.
B1506 / Station Road	Monday 29 May 2023	Slight	Dry carriageway / Daylight	No further details
B1506 / Station Road	Saturday 19 Aug 2023	Serious	Dry carriageway / Daylight	No further details
B1506 / Norwich Road /	Friday 07 Aug 2020 10:15	Serious	Dry carriageway / Daylight	Two car drivers collided head-on. A passenger in one car sustained a

School Road				slight injury whilst a driver in the other car sustained a slight injury.
B1506 / Norwich Road / School Road	Saturday 11 Jun 2022 17:11	Serious	Dry carriageway / Daylight	Two car drivers collided head-on. Four total injuries were sustained, with three occurring in one vehicle. The driver in this vehicle sustained a serious injury.
B1506 / Norwich Road / School Road	Wednesday 03 May 2023	Serious	Dry carriageway / Daylight	No further details
B1506 / Norwich Road / School Road	Saturday 10 June 2023	Serious	Dry carriageway / Daylight	No further details
B1506 / Norwich Road / School Road	Friday 03 Nov 2023	Slight	Wet or Damp Carriageway / Daylight	No further details

- 13.7.29 As indicated above, a total of 17 collisions occurred at the study areas on the local highway network within the five-year study period. Of these, nine collisions contained a 'Serious' casualty and one contained a fatality. The other seven collisions contained 'Slight' casualties only.
- 13.7.30 The fatality occurred on a straight section of road away from junctions. A review of press coverage surrounding the incident does not indicate that road layout was a factor.
- 13.7.31 A Serious collision occurred on Monday 17 October 2022 at 17:07 under dry carriageway conditions. A car driver and pedal cyclist collided whilst the car driver was attempting to pass on the car's offside along the B1506, prior to the junction with the A1304. The speed limit of the B1506 is 60mph and lane widths are between 3.2 – 3.5m, indicating an environment inconducive to safe cycling conditions. The pedal cyclist sustained a serious injury.
- 13.7.32 At the B1506 / Station Road crossroads, a further collision occurred on Sunday 03 October 2021 at 03:50 in the morning under dry carriageway conditions. Two car drivers collided whilst travelling along the B1506 and both cars were impacted on their nearside.

- 13.7.33 A further Serious collision occurred at the B1506 / Norwich Road / School Road priority crossroads on Friday 07 August 2020 at 10:15 in the morning under dry carriageway conditions. Two car drivers were involved in a head-on collision, with one driver sustaining a serious injury and one passenger sustaining a slight injury.
- 13.7.34 Another serious collision examined within the five-year study period involved two car drivers colliding head-on at the B1506 / Norwich Road / School Road priority crossroads junction. This collision occurred on Saturday 11 June 2022 at 17:11 in the afternoon under dry carriageway conditions. A total of four casualties were recorded, with one driver sustaining a serious injury. A driver and three passengers sustained slight injuries.

13.8 Assessment of Effects, Mitigation and Residual Effects

Site Enabling and Construction

Detailed Application (Eastern Parcel)

Effects

- 13.8.1 Based on the criteria outlined in Section 3, there are no major links adjacent to the site whereby the additional 4 LGVs and 28 HGVs per day in the demolition phase, and 160 LGVs and 56 HGVs per day in the construction phase, will create an increase of over 10%. Therefore, the construction phase of the development is not anticipated to generate any significant effects and has not been assessed in detail within this chapter.

Mitigation

- 13.8.2 It is expected that a Construction Traffic Management Plan (CTMP) will be required by condition which will assist to control construction movements in an acceptable manner.
- 13.8.3 Construction hours will be from 08:00 to 18:00, Monday to Friday, and from 08:00 to 13:00 on Saturday. No construction will occur outside these hours or on Bank Holidays, except in cases of emergency. Any such instances will be reported in writing to the relevant highway authority within 48 hours of their occurrence.
- 13.8.4 Traffic associated with the construction of the development is expected to be low compared to the traffic flows on the surrounding highway network. It is anticipated that any excavated material deemed suitable will be used as part of the proposed landscaping works, leaving the delivery of construction materials and personnel as the major vehicle movements during the construction phase. However, some movements associated with transporting excavated materials may still be necessary.
- 13.8.5 Construction work on the existing road network will be conducted in accordance with the Department for Transport's Chapter 8: Traffic Safety Measures and Signs for Road Works and Temporary Situations (2009). This provides a standard of good practice for traffic management during highway construction, including the placement of traffic cones and barriers, and the use of temporary road signs and traffic lights. Pedestrian

routes will be maintained or diverted with clear signage during the construction period. Barriers and signage will be provided to keep pedestrians clear of any construction works, following the guidelines in the Department for Transport's Chapter 8 manual.

Residual Effects

- 13.8.6 Due to the amount of traffic generated by construction and the introduction of mitigation measures there will be **negligible** effect on all significance categories during construction.

Hybrid Application (Eastern Parcel and Western Parcel)

Effects

- 13.8.7 As stated above the following number of vehicles will be used for the demolition and construction. Based on the criteria outlined in Section 3, there are no major links adjacent to the site whereby the additional 4 LGVs and 28 HGVs per day in the demolition phase, and 160 LGVs and 56 HGVs per day in the construction phase, will create an increase of over 10%. Therefore, the construction phase of the development is not anticipated to generate any significant effects and has not been assessed in detail within this chapter.
- 13.8.8 It is noted that the daily flows for the Detailed Application are the same as the Hybrid Application. For residential development, daily construction movements are typically the same but the overall construction period is longer for larger sites.

Mitigation

- 13.8.9 It is expected that a Construction Traffic Management Plan (CTMP) will be required by condition which will assist to control construction movements in an acceptable manner.
- 13.8.10 Construction hours will be from 08:00 to 18:00, Monday to Friday, and from 08:00 to 13:00 on Saturday. No construction will occur outside these hours or on Bank Holidays, except in cases of emergency. Any such instances will be reported in writing to the relevant highway authority within 48 hours of their occurrence.
- 13.8.11 Traffic associated with the construction of the development is expected to be low compared to the traffic flows on the surrounding highway network. It is anticipated that any excavated material deemed suitable will be used as part of the proposed landscaping works, leaving the delivery of construction materials and personnel as the major vehicle movements during the construction phase. However, some movements associated with transporting excavated materials may still be necessary.
- 13.8.12 Construction work on the existing road network will be conducted in accordance with the Department for Transport's Chapter 8: Traffic Safety Measures and Signs for Road Works and Temporary Situations (2009). This provides a standard of good practice for traffic management during highway construction, including the placement of traffic cones and barriers, and the use of temporary road signs and traffic lights. Pedestrian routes will be maintained or diverted with clear signage during the construction period. Barriers and signage

will be provided to keep pedestrians clear of any construction works, following the guidelines in the Department for Transport's Chapter 8 manual.

Residual Effects

- 13.8.13 Due to the amount of traffic generated by construction and the introduction of mitigation measures there will be a negligible effect on all significance categories during the construction period.

Operation

Detailed Application (Eastern Parcel)

Effects

- 13.8.14 Absolute numbers of vehicle trips and HGV trips generated by the development have been analysed from the predictions set out in the Transport Assessment. This can be seen in Table 13.6 below.

Table 13.6: Absolute vehicle and HGV trips generated by the Development (2029)

24-hour Annual Average Daily Traffic (AADT)			
Link ID	Link Name	AV	HGV
1	Sire Lane	962	9
2	B1506	962	9
3	B1506	929	9
4	Station Road	697	7
5	B1506	1174	11
6	Moulton Road	0	0
7	Bury Road B1506	478	5
8	Norwich Road	849	8
9	B1506	1221	12
10	School Road	0	0
11	B1506 Well Bottom	372	4
12	A1304	0	0
13	Well Bottom B1506	305	4
14	A1304	372	4
15	B1506	1240	10
16	A14	0	0

17	A14	0	0
18	Bury Road B1506	0	0
19	A14	0	0
20	Site Access 1	0	0
21	Site Access 2	0	0
22	Sir Graham Kirkham Avenue	690	10
23	Link Road	0	0

13.8.15 **Table 13.7:** provides the 'with development flows' on the study links in 2029.

Table 13.7: 2029 with Developments

24-hour Annual Average Daily Traffic (AADT)				
Link ID	All Veh	HGV	HGV %	Speed Limit
1	1291	9	1%	40
2	8371	223	3%	40
3	8345	223	3%	40
4	6892	7	0%	40
5	12129	225	2%	30
6	3866	55	1%	30
7	9038	232	3%	30
8	2484	105	4%	60
9	8607	205	2%	60
10	1097	21	2%	60
11	7041	121	2%	60
12	8327	138	2%	30
13	7300	114	2%	30
14	15569	225	1%	30
15	8875	368	4%	60
16	36714	5477	15%	70
17	56964	8304	15%	70

18	12958	242	2%	30
19	36714	5477	15%	70
20	0	0	0%	30
21	0	0	0%	30
22	684	9	1%	30
23	0	0	0%	30

13.8.16 **Table 13.8** below shows the percentage change in 'all vehicle' and 'HGV' flows caused by the development in 2029. It should be noted that some links listed below are within the existing site boundary and not in use. In these cases, no traffic is recorded within the 'without' scenarios, and therefore a percentage increase cannot be quantified. 'N/A' has been provided within these cells.

Table 13.8: Predicted Total Traffic Impact over a 24-hour day (2029)

Link ID	Link Name	2029 without		2029 with		% increase	
		AV	HGV	AV	HGV	AV	HGV
1	Sire Lane	338	0	1291	9	281.9%	N/A
2	B1506	7418	214	8371	223	12.8%	4.3%
3	B1506	7425	214	8345	223	12.4%	4.2%
4	Station Road	6202	0	6892	7	11.1%	N/A
5	B1506	10965	214	12129	225	10.6%	5.3%
6	Moulton Road	3866	55	3866	55	0.0%	0.0%
7	Bury Road B1506	8565	228	9038	232	5.5%	2.0%
8	Norwich Road	1642	97	2484	105	51.2%	8.5%
9	B1506	7398	193	8607	205	16.4%	6.1%
10	School Road	1097	21	1097	21	0.0%	0.0%

11	B1506 Well Bottom	6673	117	7041	121	5.5%	3.1%
12	A1304	8327	138	8327	138	0.0%	0.0%
13	Well Bottom B1506	6997	110	7300	114	4.3%	3.3%
14	A1304	15201	221	15569	225	2.4%	1.6%
15	B1506	7646	359	8875	368	16.1%	2.6%
16	A14	36714	5477	36714	5477	0.0%	0.0%
17	A14	56964	8304	56964	8304	0.0%	0.0%
18	Bury Road B1506	12958	242	12958	242	0.0%	0.0%
19	A14	36714	5477	36714	5477	0.0%	0.0%
20	Site Access 1	0	0	0	0	N/A	N/A
21	Site Access 2	0	0	0	0	N/A	N/A
22	Sir Graham Kirkham Avenue	0	0	684	9	N/A	N/A
23	Link Road	0	0	0	0	N/A	N/A

Severance of Communities

- 13.8.17 The significance categories are still based on the MEA (Manual of Environmental Appraisal – DfT 1983) indicators, which determine the significance of relief from severance. These can also be described in TAG Unit A3, May 2024. The identified categories are: 'slight,' indicating an increase in vehicle movements of 30%; 'moderate,' indicating an increase of 60%; and 'substantial,' indicating an increase of 90% or more.
- 13.8.18 The IEMA Guidelines sets out how to assess the magnitude of effect for severance in the following way. The guidelines states that “severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. Additional, “Changes in traffic flow of 30%, 60% and 90% are

regarded as producing ‘slight’, ‘moderate’ and ‘substantial’ changes in severance respectively”. However, the guidelines acknowledges that the measurement and prediction of severance is extremely difficult (para 3.16 of IEMA). This is particularly challenging on lightly trafficked roads where any change results in a large percentage increase but that does not correspond to a potential for severance. It should be noted that the definition refers to the *perceived division* caused by a *major traffic artery*.

Severance effects

- 13.8.19 The results in **Table 13.8** above indicate that while there will be an increase in traffic movements on the local highway network, the majority do not exceed a 30% uplift meaning that there is a negligible effect. Link 1, Sire Lane, which is a proposed access for the Detailed Application, experiences a percentage increase of 282%. Vehicles using Sire Lane are predominantly from a small residential development on Larnach Drive and Byerley Close. The increase in traffic on this route is expected due to the scale of the development using Sire Lane as access. As set out above, the percentage increase test is intended for major traffic arteries so should be treated with caution. Sire Lane will go from serving 38 homes to serving 136 homes, within a typical content for a residential development access. This level of change is not considered to breach a limit where severance is likely.
- 13.8.20 There is a ‘slight’ increase of 51.2% on Norwich Road (Link 8). Norwich Road is a rural lane which has no residential development on either side of the road, nor are there any pedestrian facilities on the road. There are therefore no communities affected by the increase in movement that could cause severance effects.
- 13.8.21 Such, it is concluded that the development will create no discernible environmental impact on severance. Therefore, the severance effect of the development is considered **negligible**.

Driver Delay

- 13.8.22 Driver delay can be determined at key junctions using standard modelling practice identifying the average delay. However, the advice identifies that such 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”⁵⁹.
- 13.8.23 Driver delay has been assessed for the future year 2029 for Hybrid Application at the key junctions within the assessment area. The analysis only considers the impact of the junctions in close proximity to the Site where noticeable effects of a 30% or more increase in driver delay is observed and at significant junctions.

⁵⁹ Paragraph 3.20 - Environmental Assessment of Traffic and Movement, Institute of Environmental Management and Assessment (IEMA) (July 2023)

- 13.8.24 Analysis has been carried out with regards to two junctions, listed below in **Table 13.9**. It should be noted that the Norwich Road junction has been redesigned to mitigate safety issues, these are explained in full within the Transport Assessments which are submitted with the planning applications as stand alone reports.

Table 13.9: Predicted Driver Delay (2029)

Link ID	Link Name	Average Vehicle Delay per Junction (seconds)			
		2029 without		2029 with	
		AM	PM	AM	PM
1	Sire Lane	6	7	7	7
8	Norwich Road	9	9	10	9

- 13.8.25 As can be seen above the analysis concluded that the junctions will not experience a significant increase in driver delay as a result of the development. Driver delay at the junctions for both the AM and PM Peak is well below 30% and such it can be considered that the increase in driver delay is **negligible**.
- 13.8.26 The full analysis of the results of these assessments are included within Chapter 7 of the Transport Assessment.

Non-Motorised Vehicle User Delay

- 13.8.27 The IEMA guidelines state that the assessment of pedestrian delay serves as a proxy for the delay that other modes of non-motorised users may experience when crossing roads.
- 13.8.28 Changes in the volume, composition, or speed of traffic may affect people's ability to cross roads. Generally, increases in traffic levels are likely to lead to greater delays. Delays will also depend on the general level of pedestrian and non-motorised user activity, visibility, and physical conditions.
- 13.8.29 Given the range of local factors and conditions that can influence non-motorised user delay, such as a discrete delay having a lesser impact in an urban environment than in a rural setting, the IEMA guidelines do not set definitive thresholds for assessing non-motorised user delay. The guidelines recommend that a competent traffic and movement expert uses their judgment to determine whether any changes in pedestrian and non-motorised user delay may be significant.
- 13.8.30 The IEMA guidelines also state that pedestrian delay and severance can be grouped together, as an increase in traffic flows is likely to lead to greater delays. They indicate that increases in total traffic flows of 30%, 60%, and 90% could result in slight, moderate, and substantial changes in severance, respectively.
- 13.8.31 However earlier IEMA guidance also considered a lower limit where pedestrian delay needs to be assessed at 1400 vehicles per hour. None of the links that are sensitive to change set out in Table 13.1 have hourly

two-way flows in the with development scenarios that are over 1400 vehicles per hour. This means that all traffic changes on all links have a **negligible** effect on pedestrian delay.

Fear and Intimidation (Non-Motorised Vehicle User Amenity)

- 13.8.32 In relation to Fear and Intimidation, the magnitude of change is dependent upon the volume of traffic, its HGV composition, speeds of vehicles and proximity to people or the lack of protection caused by such factors as narrow pavement widths. The IEMA Guidelines states that there are no commonly agreed thresholds for estimating this from known traffic and physical conditions, but it does nevertheless suggest some thresholds, based on previous research, which have been used in conjunction with the factors noted above and professional judgement. These thresholds are noted in **Table 13.10**, **Table 13.11**, and **Table 13.12** below.

Table 13.10: Fear and Intimidation Threshold⁶⁰

Degree of Hazard Score	Average traffic flow over 18-hour day – all vehicles / hour 2-way (a)	Total 18-hour HGV flow (b)	Average vehicle speed over 18-hour day – mph (c)
30	+1,800	+ 3,000	>40
20	1,200 – 1,800	2,000 – 3,000	30 – 40
10	600 – 1,200	1,000 – 2,000	20 – 30
0	<600	<1,000	<20

Table 13.11: Level of Fear and Intimidation⁶¹

Level of fear and intimidation	Total Hazard Score (a) + (b) + (c)
Extreme	71+
Great	41 - 70
Moderate	21 - 40
Small	0 - 20

⁶⁰ Page 19 – IEMA Environmental Assessment of Traffic and Movement (July 2023)

⁶¹ Page 20 – IEMA Environmental Assessment of Traffic and Movement (July 2023)

Table 13.12: Fear and Intimidation Magnitude of Impact⁶²

Magnitude of change	Change in step/ traffic flows (AADT) from baseline conditions
High	Two step change in level
Medium	One step change in level, but with >400 veh increase in average 18hr AV two-way all vehicle flow; and/ or >500 HV increase in total 18hr HV flow
Low	One step change in level with <400 veh increase in average 18hr AV two-way all vehicle flow; and/ or <500 HV increase in total 18hr HV flow
Negligible	No change in step changes

13.8.33 **Tables 13.13** and **13.14** below calculates the level of fear and intimidation for the 2029 traffic flows on sensitive links without development, and 2029 traffic flows with development respectively based upon the IEMA guidelines.

Table 13.13: Level of Fear and Intimidation (2029 without Development)

Link	Average traffic flow over 18-hour day – all vehicles/hour	Total 18-hour HV flow	Average vehicle speed	Total hazard score	Level of fear and intimidation
1	17	0	20	10	Small
3	373	193	40	30	Moderate
4	311	0	40	30	Moderate
5	550	193	30	20	Small
6	194	50	30	20	Small
7	430	206	30	20	Small

⁶² Page 20 – IEMA Environmental Assessment of Traffic and Movement (July 2023)

14	757	200	30	30	Moderate
15	384	324	60	30	Moderate
18	650	218	30	30	Moderate

Table 13.14: Level of Fear and Intimidation (2029 with Development)

Link	Average traffic flow over 18-hour day – all vehicles/hour	Total 18-hour HV flow	Average vehicle speed	Total hazard score	Level of fear and intimidation
1	65	8	20	10	Small
3	419	201	40	30	Moderate
4	346	6	40	30	Moderate
5	609	203	30	30	Moderate
6	194	50	30	20	Small
7	454	210	30	20	Small
14	780	203	30	30	Moderate
15	445	333	60	30	Moderate
18	669	221	30	30	Moderate

13.8.34 **Table 13.15** then calculates the magnitude of impact upon fear and intimidation.

Table 13.15: Step Change and Magnitude of Impact upon Fear and Intimidation (2029)

Link	Level of fear and intimidation – 2029 baseline traffic flows	Level of fear and intimidation – 2029 baseline plus development flows	Step change	Magnitude of impact
1	Small	Small	0	Negligible
3	Moderate	Moderate	0	Negligible
4	Moderate	Moderate	0	Negligible
5	Small	Moderate	1	Low
6	Small	Small	0	Negligible
7	Small	Small	0	Negligible
14	Moderate	Moderate	0	Negligible

15	Moderate	Moderate	0	Negligible
18	Moderate	Moderate	0	Negligible

- 13.8.35 The assessments show that there is one location where a link sees a 1-step change in fear and intimidation level. This is located on the B1506 to the east of the site. The actual change in flow is modest but there is a jump between categories. Consequently, without mitigation there would be a **minor adverse** effect on fear and intimidation on this link which is not significant in EIA terms.

Accidents and safety

- 13.8.36 As set out in the IEMA guidance, the assessment of accidents and safety is reliant on judgement of the assessor. Accidents on the road network are rare events and often have multiple factors, however the overriding cause is typically human error. The introduction of additional movements inevitably introduces the potential for more accidents. However, the development does not generate people and the new residents / occupiers of the site would still be making journeys on the transport network elsewhere. Consequently, it is concluded that the development will have a **negligible** effect on accidents and safety.
- 13.8.37 The existing accident review does highlight existing clusters of accidents at some junctions as set out above. Junction improvements and other mitigation measures are set out in the mitigation section of the chapter below.

Hybrid Application (Eastern and Western Parcel)

Effects

- 13.8.38 Absolute numbers of vehicle trips and HGV trips generated by the development have been analysed from the predictions set out in the Transport Assessment. This can be seen in **Table 13.16**.

Table 13.16: Absolute vehicle and HGV trips generated by the Development (2031)

24-hour Annual Average Daily Traffic (AADT)			
Link ID	Link Name	AV	HGV
1	Sire Lane	790	4
2	B1506	3696	18
3	B1506	3397	17
4	Station Road	2024	10
5	B1506	3397	17
6	Moulton Road	0	0

7	Bury Road B1506	1374	7
8	Norwich Road	2422	12
9	B1506	3470	17
10	School Road	0	0
11	B1506 Well Bottom	1048	5
12	A1304	0	2
13	Well Bottom B1506	1095	7
14	A1304	1095	5
15	B1506	3663	18
16	A14	0	0
17	A14	0	0
18	Bury Road B1506	0	0
19	A14	0	0
20	Site Access 1	1055	6
21	Site Access 2	1055	8
22	Sir Graham Kirkham Avenue	763	8
23	Link Road	1291	0

13.8.39 **Table 13.17** provides the ‘with development flows’ on the study links in 2031 for Hybrid Application.

Table 13.17: 2023 with Development

24-hour Annual Average Daily Traffic (AADT)				
Link ID	All Veh	HGV	HGV %	Speed Limit
1	1139	4	0%	40
2	11261	236	2%	40
3	10968	234	2%	40
4	8341	10	0%	40
5	14565	234	2%	30
6	3929	56	1%	30

7	10088	238	2%	30
8	4108	110	3%	60
9	11013	213	2%	60
10	1115	21	2%	60
11	7838	124	2%	60
12	8463	142	2%	30
13	8214	119	1%	30
14	16552	230	1%	30
15	11459	383	3%	60
16	37315	5567	15%	70
17	57896	8440	15%	70
18	13170	246	2%	30
19	37315	5567	15%	70
20	1062	6	1%	30
21	1062	8	1%	30
22	768	8	1%	30
23	1300	0	0%	30

13.8.40 **Tables 13.18** below shows the Hybrid Application 'all vehicle' and 'HGV' numbers associated with and without the development. It should be noted that some links listed below are within the existing site boundary and not in use. In these cases, no traffic is recorded within the 'without' scenarios, and therefore a percentage increase cannot be quantified. 'N/A' has been provided within these cells.

Table 13.18: Predicted Total Traffic Impact over a 24-hour day (2031)

Link ID	Link Name	2031 without		2031 with		% increase	
		AV	HGV	AV	HGV	AV	HGV
1	Sire Lane	338	0	1139	4	236.8%	N/A
2	B1506	7418	214	11261	236	51.8%	10.3%
3	B1506	7425	214	10968	234	47.7%	9.5%
4	Station Road	6202	0	8341	10	34.5%	N/A
5	B1506	10965	214	14565	234	32.8%	9.5%

6	Moulton Road	3866	55	3929	56	1.6%	1.6%
7	Bury Road B1506	8565	228	10088	238	17.8%	4.6%
8	Norwich Road	1642	97	4108	110	150.1%	14.0%
9	B1506	7398	193	11013	213	48.9%	10.5%
10	School Road	1097	21	1115	21	1.6%	1.6%
11	B1506 Well Bottom	6673	117	7838	124	17.5%	6.0%
12	A1304	8327	138	8463	142	1.6%	2.9%
13	Well Bottom B1506	6997	110	8214	119	17.4%	8.2%
14	A1304	15201	221	16552	230	8.9%	4.1%
15	B1506	7646	359	11459	383	49.9%	6.7%
16	A14	36714	5477	37315	5567	1.6%	1.6%
17	A14	56964	8304	57896	8440	1.6%	1.6%
18	Bury Road B1506	12958	242	13170	246	1.6%	1.6%
19	A14	36714	5477	37315	5567	1.6%	1.6%
20	Site Access 1	0	0	1062	6	N/A	N/A
21	Site Access 2	0	0	1062	8	N/A	N/A
22	Sir Graham Kirkham Avenue	0	0	768	8	N/A	N/A
23	Link Road	0	0	1300	0	N/A	N/A

Severance effects

13.8.41 The results in **Table 13.18** indicate that while there will be an increase in traffic on the local highway network. The following links have a percentage uplift of 30% which are included within the 'slight' threshold.

- Link 2 – B1506 West of Sire Lane (51.8%)
- Link 3 – B1506 East of Sire Lane (47.7%)
- Link 4 – Station Road (34.5%)
- Link 5 – B1506 West of Moulton Road (32.8%)

- Link 9 – B1506 East of Norwich Road (48.8%)
- Link 15 – B1506 West of Sir Graham Kirkham Avenue (49.9%)

13.8.42 For these links there will be an increase in traffic which may cause severance effects making it more difficult for people to cross the road. Additional crossing facilities are proposed within the mitigation measures section to address these effects.

1.1.1. The following links are above the 'substantial' threshold of 90%:

- Link 1 – Sire Lane (236.8%)
- Link 8 – Norwich Road (150.1%)

13.8.43 As noted in relation to the Detailed Application proposals above, the change on Sire Lane is not at an absolute level that would justify severance occurring. Norwich Road has no communities to generate severance effects.

13.8.44 It is therefore concluded that without appropriate mitigation the development would have a minor negative effect on severance within the study area which is not significant in EIA terms.

Driver Delay

13.8.45 Driver delay can be determined at key junctions using standard modelling practice identifying the average delay. However, the advice identifies that such 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"⁶³.

13.8.46 Driver delay has been assessed for the future year 2031 for the Hybrid Application at the key junctions within the assessment area. The analysis only considers the impact of the junctions in close proximity to the Site where noticeable effects of a 30% or more increase in driver delay is observed and at significant signalised junctions.

13.8.47 Analysis has been carried out with regards to eight junctions within the Hybrid Application, these can be seen listed above. As mentioned previously the Norwich Road/ B1596 Well Bottom/ School Road junction has proposed mitigation measures as part of a junction redesign, as detailed in the Transport Assessment. The results in **Table 13.19** below incorporate these into the driver delay analysis.

⁶³ Paragraph 3.20 - Environmental Assessment of Traffic and Movement, Institute of Environmental Management and Assessment (IEMA) (July 2023)

Table 13.19: Predicted Driver Delay (2031)

Link ID	Link Name	Average Vehicle Delay per Junction (seconds)			
		2031 without		2031 with	
		AM	PM	AM	PM
1	Sire Lane	6	7	8	8
2	B1506 West of Sire Lane	6	6	7	7
4	Station Road	16	13	36	37
5	B1506 West of Moulton Road	8	7	8	8
8	Norwich Road	9	9	10	10
9	B1506 East of Norwich Road	5	5	6	6

- 13.8.48 The analysis concluded that the junctions will not experience a significant increase in driver delay as a result of the development. Driver delay at most of the junctions for both the AM and PM Peak is well below 30% and such it can be considered that the increase in driver delay is negligible. There is an increase in delay at the station road junction (proposed mini-roundabout) of around 20 seconds in the peak periods. It is not considered that this increase in the context of a wider journey will be perceptible and consequently is not considered significant.
- 13.8.49 The full analysis of the results of these assessments are included within Chapter 7 of the Transport Assessment. The results concluded that at all junctions assessed, driver delay does not increase by, or near, 30% during all scenarios in both AM and PM Peaks.
- 13.8.50 It can be concluded that the impact in terms of driver delay at other junctions within the study area resulting from the developemtn is predicted to be **negligible**.

Non-Motorised Vehicle User Delay

- 13.8.51 The IEMA guidelines state that the assessment of pedestrian delay serves as a proxy for the delay that other modes of non-motorised users may experience when crossing roads.
- 13.8.52 Changes in the volume, composition, or speed of traffic may affect people's ability to cross roads. Generally, increases in traffic levels are likely to lead to greater delays. Delays will also depend on the general level of pedestrian and non-motorised user activity, visibility, and physical conditions.
- 13.8.53 Given the range of local factors and conditions that can influence non-motorised user delay, such as a discrete delay having a lesser impact in an urban environment than in a rural setting, the IEMA guidelines do not set definitive thresholds for assessing non-motorised user delay. The guidelines recommend that a competent traffic and movement expert uses their judgment to determine whether any changes in pedestrian and non-motorised user delay may be significant.
- 13.8.54 The IEMA guidelines also state that pedestrian delay and severance can be grouped together, as an increase in traffic flows is likely to lead to greater delays. They indicate that increases in total traffic flows of 30%, 60%, and 90% could result in slight, moderate, and substantial changes in severance, respectively.
- 13.8.55 However earlier IEMA guidance also considered a lower limit where pedestrian delay needs to be assessed at 1400 vehicles per hour. None of the links that are sensitive to change set out in **Table 13.1** have hourly two-way flows in the with development scenarios that are over 1400 vehicles per hour. This means that all links have a **negligible** effect on pedestrian delay.

Fear and Intimidation (Non-Motorised Vehicle User Amenity)

- 13.8.56 In relation to Fear and Intimidation, the magnitude of change is dependent upon the volume of traffic, its HGV composition, speeds of vehicles and proximity to people or the lack of protection caused by such factors as narrow pavement widths. The IEMA Guidelines states that there are no commonly agreed thresholds for estimating this from known traffic and physical conditions, but it does nevertheless suggest some thresholds, based on previous research, which have been used in conjunction with the factors noted above and professional judgement. These thresholds are noted in **Table 13.20**, **Table 13.21**, and **Table 13.22** below.

Table 13.20: Fear and Intimidation Threshold⁶⁴

Degree of Hazard Score	Average traffic flow over 18-hour day – all vehicles / hour 2-way (a)	Total 18-hour HGV flow (b)	Average vehicle speed over 18-hour day – mph (c)
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⁶⁴ Page 19 – IEMA Environmental Assessment of Traffic and Movement (July 2023)

30	+1,800	+ 3,000	>40
20	1,200 – 1,800	2,000 – 3,000	30 – 40
10	600 – 1,200	1,000 – 2,000	20 – 30
0	<600	<1,000	<20

Table 13.21: Level of Fear and Intimidation⁶⁵

Level of fear and intimidation	Total Hazard Score (a) + (b) + (c)
Extreme	71+
Great	41 - 70
Moderate	21 - 40
Small	0 - 20

Table 13.22: Fear and Intimidation Magnitude of Impact⁶⁶

Magnitude of change	Change in step/ traffic flows (AADT) from baseline conditions
High	Two step change in level
Medium	One step change in level, but with >400 veh increase in average 18hr AV two-way all vehicle flow; and/ or >500 HV increase in total 18hr HV flow
Low	One step change in level with <400 veh increase in average 17hr AV two-way all vehicle flow; and/ or <500 HV increase in total 18hr HV flow
Negligible	No change in step changes

⁶⁵ Page 20 – IEMA Environmental Assessment of Traffic and Movement (July 2023)

⁶⁶ Page 20 – IEMA Environmental Assessment of Traffic and Movement (July 2023)

13.8.57 **Table 13.23** and **Table 13.24** below calculate the level of fear and intimidation for the 2031 traffic flows without development and 2031 traffic flows with the Hybrid Application respectively based upon the IEMA guidelines.

Table 13.23: Level of Fear and Intimidation (2031 without Development)

Link	Average traffic flow over 18-hour day – all vehicles/hour	Total 18-hour HV flow	Average vehicle speed	Total hazard score	Level of fear and intimidation
1	17	0	20	10	Small
3	379	196	40	30	Moderate
4	316	0	40	30	Moderate
5	559	196	30	20	Small
6	197	51	30	20	Small
7	437	209	30	20	Small
14	770	203	30	30	Moderate
15	390	329	60	30	Moderate
18	661	222	30	30	Moderate

Table 13.24: Level of Fear and Intimidation (2031 with Development)

Link	Average traffic flow over 18-hour day – all vehicles/hour	Total 18-hour HV flow	Average vehicle speed	Total hazard score	Level of fear and intimidation
1	57	4	20	10	Small
3	550	212	40	30	Moderate
4	419	9	40	30	Moderate
5	731	212	30	30	Moderate
6	197	51	30	20	Small
7	506	215	30	20	Small
14	829	208	30	30	Moderate

15	575	346	60	30	Moderate
18	716	227	30	30	Moderate

13.8.58 **Table 13.25** then calculates the magnitude of impact upon fear and intimidation for Hybrid Application.

Table 13.25: Step Change and Magnitude of Impact upon Fear and Intimidation (2031)

Link	Level of fear and intimidation – 2031 baseline traffic flows	Level of fear and intimidation – 2031 baseline plus Project flows	Step change	Magnitude of impact
1	Small	Small	0	Negligible
3	Moderate	Moderate	0	Negligible
4	Moderate	Moderate	0	Negligible
5	Small	Moderate	1	Low
6	Small	Small	0	Negligible
7	Small	Small	0	Negligible
14	Moderate	Moderate	0	Negligible
17	Moderate	Moderate	0	Negligible
18	Moderate	Moderate	0	Negligible

13.8.59 The assessments show that there is one location where a link sees a 1-step change in fear and intimidation level. This is located on the B1506 to the east of the site. Consequently, without mitigation there would be a **minor adverse** effect on fear and intimidation on this link.

Accidents and safety

13.8.60 As set out in the IEMA guidance, the assessment of accidents and safety is reliant on judgement of the assessor. Accidents on the road network are rare events and often have multiple factors, however the overriding cause is typically human error. The introduction of additional movements and access junctions inevitably introduces the potential for more accidents. However, the development does not generate people and the new residents / occupiers of the site would still be making journeys on the transport network elsewhere. Consequently, it is concluded that the development will have a **negligible** effect on accidents and safety.

13.8.61 The existing accident review does highlight existing clusters of accidents at some junctions as set out above. Junction improvements and other mitigation measures are set out in the mitigation section of the chapter below.

13.9 Cumulative Assessment of Effects, Mitigation and Residual Effects

Site Enabling and Construction

Detailed Application (Eastern Parcel)

Hybrid Application (Eastern Parcel and Western Parcel)

13.9.1 The assessment of effects of the development during the construction stages above concludes that there will be a negligible effect on the significance criteria in relation to traffic movements due to the level of change. No mitigation is therefore necessary from the perspective of the Environmental Statement.

13.9.2 A Construction Traffic Management Plan will be provided to control construction movements which will further limit any potential negative effects of construction traffic.

13.9.3 The residual effect of the construction period is therefore **negligible**

13.10 Cumulative Assessment of Effects, Mitigation and Residual Effects

Operation

13.10.1 The assessment of effects above finds that prior to mitigation there is a potential for a minor adverse effect on fear and intimidation on the B1506 between the site and the village centre. This is caused by the change in traffic levels in both the Detailed Application and the Hybrid Application.

13.10.2 In addition, the accident review does highlight an area of concern at the B1506 / Norwich Road / School Road junction.

13.10.3 In relation to these effects the following mitigation measures are proposed:

- Along the B1506 footway widening and controlled crossing are proposed that will enhance pedestrian facilities and make it easier and safer to cross to bus stops.
- At the B1506 / Norwich Road / School Road junction a safety improvement is proposed that widens the right-turn lane to provide a safer turning area.
- In addition, a speed limit reduction is proposed so that the B1506 / Norwich Road / School Road junction is within a 40mph limit rather than 60mph and the extent of 30mph limit is also extended.

13.10.4 These measures are proposed to be implemented with both Planning Applications

13.10.5 Full details of the mitigation measures are set out in the Transport Assessment.

- 13.10.6 With these mitigation measures implemented it is concluded that the effect on fear and intimidation in both Planning Applications will reduce to **negligible**.
- 13.10.7 It should be noted that further mitigation measures are proposed within the Transport Assessment that do not directly address environmental effects but still improve the general transport conditions. These are summarised below.

Detailed Application (Eastern Parcel) Mitigation Measures

Public Transport

- 13.10.8 New eastbound and westbound bus stops are proposed for the B1506. The bus stops are proposed to be located to the east of Sir Graham Kirkham Avenue. This will provide the residents access to a bus stop within 400m of their dwelling.
- 13.10.9 A pedestrian crossing will be installed along the B1506 to ensure safe access to the proposed bus stop on the northern side of the B1506.
- 13.10.10 It is expected that an appropriate contribution will be made to enhancing the frequency of bus services past the site through planning obligations.

Active Travel

- 13.10.11 The development will have multiple pedestrian and cycle connection points into the surrounding network. Pedestrian and cycle access can be taken from the two existing vehicle access points at Sir Graham Kirkham Avenue and Sire Lane. As part of the off-site improvements, a shared cycleway will be constructed along the southern edge of the B1506. The shared cycleway has been designed in accordance with LTN 1/20 and MfS.
- 13.10.12 A pedestrian/cycle access point will be available at the east of the site. The pedestrian/cycle link will route eastwards out of the site via Sire Lane and Jeddah Way allowing a direct connection to the B1085, and Kentford Post Office.
- 13.10.13 The improvement works will permit a connection from the sites' access points to the Bell junction, enabling a connection to Kennett Railway Station (north), Kennett Post Office (south) and on to Kentford.
- 13.10.14 As mentioned, pedestrian and cycle access can be taken from two proposed vehicle access points, with one located in the northwest corner of the site from Sire Lane and one east of this from Sir Graham Kirkham Avenue, both connecting to the B1506. These access points will permit cycle and pedestrian access to the off-site improvement works taking place along the southern footway of the B1506. The improvement works will permit a connection from the sites' access points to the Bell junction, permitting a connection to Kennett Railway Station (north), Kennett Post Office (south) and on to Kentford.

- 13.10.15 The site will provide cycle parking for the residential development in accordance with guidance as set out by SCC. Further, cycle parking will be provided at the non-residential sites in accordance with standards set out by SCC.

Vehicular

- 13.10.16 The development will accommodate vehicular access to the site from the north. The site will utilise the two existing access points. This encompasses Sir Graham Kirkham Avenue, and Sire Lane.
- 13.10.17 It is proposed that 98 units will be served by Sire Lane, while Sir Graham Kirkham Avenue will serve 204 dwellings, the proposed shop, and community building / hub.

Green Transport

- 13.10.18 Electric vehicle charging points will be provided in accordance with the policy requirements and Building Regulations.
- 13.10.19 Engaging the community and stakeholders is vital for the success of these measures. Establishing channels for community feedback on transportation issues allows for continuous improvement of plans. Educational campaigns can also inform residents about the benefits of using public transport, cycling, and walking. These measures are secured via the associated Travel Plan (which is submitted in support of both Applications).

Hybrid Application (Eastern Parcel and Western Parcel) Mitigation Measures

Public Transport

- 13.10.20 New eastbound and westbound bus stops are proposed for the B1506. The bus stops are proposed to be located to the east of Sir Graham Kirkham Avenue and between the proposed new access junctions. These will provide the residents access to a bus stop within 400m of their dwelling.
- 13.10.21 A pedestrian crossing will be installed along the B1506 to ensure safe access to the proposed bus stop on the northern side of the B1506.
- 13.10.22 A Pegasus crossing is proposed close to the second pair of bus stops to allow pedestrian crossing and assist wider recreational horse use in the area.
- 13.10.23 It is expected that an appropriate contribution will be made to enhancing the frequency of bus services past the site through planning obligations.

Active Travel

- 13.10.24 The development will have multiple pedestrian and cycle connection points into the surrounding network. Pedestrian and cycle access can be taken from the two existing vehicle access points at Sir Graham Kirkham Avenue and Sire Lane. As part of the off-site improvements, a shared cycleway will be constructed

along the southern edge of the B1506. The shared cycleway has been designed in accordance with LTN 1/20 and MfS.

- 13.10.25 A pedestrian/cycle access point will be available at the east of the site. The pedestrian/cycle link will route eastwards out of the site via Sire Lane and Jeddah Way allowing a direct connection to the B1085, and Kentford Post Office.
- 13.10.26 The improvement works will permit a connection from the sites' access points to the Bell junction, enabling a connection to Kennett Railway Station (north), Kennett Post Office (south) and on to Kentford.
- 13.10.27 Pedestrian and cycle access will also be provided from the two proposed vehicle access points, with one located in the northwest corner of the site and one east of this, both connecting to the B1506. These access points will permit cycle and pedestrian access to the off-site improvement works taking place along the southern footway of the B1506. The improvement works will permit a connection from the sites' access points to the Bell junction, permitting a connection to Kennett Railway Station (north), Kennett Post Office (south) and on to Kentford.
- 13.10.28 Further, a pedestrian/cycle access points will be available from the southwestern corner of the site. The proposals include a shared link across the site running from the southwest corner to the northern border, this will be tree-lined and encourage active travel through the site. The access point will provide access to School Road and will provide a connection to Moulton.
- 13.10.29 To encourage active travel through and to/from the site, proposals include the provision of a pedestrian footway along School Road, connecting the Site to Moulton, and amenities within Moulton including Moulton CEVC Primary School.
- 13.10.30 The site will provide cycle parking for the residential development in accordance with guidance as set out by SCC. Further, cycle parking will be provided at the non-residential sites in accordance with standards set out by SCC.

Vehicular

- 13.10.31 It is proposed that 98 units will be served by Sire Lane, while Sir Graham Kirkham Avenue will serve 204 dwellings, the proposed shop, and community building / hub.
- 13.10.32 Two new accesses are proposed to be developed in the north-west of the site. The proposed site accesses will be designed in accordance with standards set out in Manual for Streets and Design Manual for Roads and Bridges (DMRB).

Green Transport

- 13.10.33 Electric vehicle charging points will be provided in accordance with the policy requirements and Building Regulations.

13.10.34 Engaging the community and stakeholders is vital for the success of these measures. Establishing channels for community feedback on transportation issues allows for continuous improvement of plans. Educational campaigns can also inform residents about the benefits of using public transport, cycling, and walking. These measures are explained in detail within the associated Travel Plan (TRP-0005-04).

13.11 Summary

13.11.1 The assessment conducted in this Chapter has been carried out in line with the guidance set out in the Institute of Environmental Management and Assessment (IEMA) Guidelines: Environmental Assessment of Traffic and Movement (July 2023).

13.11.2 Baseline traffic conditions have been established through data collection both through publicly available sources, and also site-specific traffic counts undertaken in 2024.

13.11.3 Traffic growth and committed development flows are used to predict future baseline traffic flows without development for the 2029 and 2031 future year assessments.

13.11.4 Traffic flow predictions for the development during construction and operational phases have been generated. The details of the trip generation and distribution exercise are taken from the Transport Assessment.

13.11.5 The effects of the additional development traffic on the study network are considered in relation to:

- Severance;
- Driver Delay;
- Non-Motorised Vehicle User Delay / Pedestrian and Cycle Amenity;
- Fear and Intimidation; and
- Accidents and Safety.

Table 13.26: Summary of effects due to impacts on Transport

Receptor	Potential Effects	Significance of Effects Prior to Mitigation	Additional Mitigation	Significance of Residual Effects
Construction				
Road Users. People at home. People in workplaces. People walking. People cycling.	Severance	Negligible	CTMP	Negligible
	Driver Delay	Negligible		Negligible
	Pedestrian Amenity	Negligible		Negligible
	Fear and Intimidation	Negligible		Negligible

Receptor	Potential Effects	Significance of Effects Prior to Mitigation	Additional Mitigation	Significance of Residual Effects
	Accidents and Safety	Negligible		Negligible
Operation – Hybrid Application				
Road Users. People at home. People in workplaces. People walking. People cycling.	Severance	Negligible		Negligible
	Driver Delay	Negligible		Negligible
	Pedestrian Amenity	P D LT minor adverse	Widened footway and new crossings plus speed limit changes	Negligible
	Fear and Intimidation	P D LT minor adverse		Negligible
	Accidents and Safety	Negligible		Negligible
Operation – Hybrid Application				
Road Users. People at home. People in workplaces. People walking. People cycling.	Severance	Negligible		Negligible
	Driver Delay	Negligible		Negligible
	Pedestrian Amenity	P D LT minor adverse	Widened footway and new crossings plus speed limit changes	Negligible
	Fear and Intimidation	P D LT minor adverse		Negligible
	Accidents and Safety	Negligible		Negligible

Key to table: P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term, N/A = Not Applicable

14.0 CLIMATE CHANGE

14.1 Introduction

- 14.1.1 This Chapter reports the assessment of the likely significant environmental effects of the Planning Applications with respect to Climate Change. It describes the methods used to assess the effects; the baseline conditions currently existing at the Application Sites and surrounding area; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.
- 14.1.2 The assessment takes into account current legislation, policy and technical guidance.
- 14.1.3 This Chapter should be read together with other technical Chapters in this ES.

14.2 Appendices

Table 14.1: Appendices for Chapter 14

Appendix No.	Document
14.1	Greenhouse Gas Emissions and Mitigation Statement
14.2	Climate Change Risk Assessment
14.3	Energy and Sustainability Report (Detailed Application)
14.4	Energy and Sustainability Report (Hybrid Application)
14.5	Whole Life Carbon Report

14.3 Legislation, Policy and Guidance

Legislative Framework

Climate Change Act 2008 (as amended in 2019)

- 14.3.1 The Climate Change Act 2008 establishes the framework for the UK to set and deliver greenhouse gas emission reduction targets, mainly through the establishment of the Committee on Climate Change which ensures targets are evidence based and independently assessed. The Act was amended in 2019 to legislate a long-term, economy-wide target to reach net-zero greenhouse gas emissions, including methane, by 2050.
- 14.3.2 In addition to this, the Government is required to regularly report on emission target progress, assess the risks and opportunities to the UK associated with climate change, and develop preparation and adaptive plans for these.

- 14.3.3 The Government is also required by the Climate Change Act (2008) to conduct a Climate Change Risk Assessment (CCRA) every five years to inform the National Adaptation Plans for England, Scotland, Wales and Northern Ireland. The third such national assessment was published in June 2022 and marks the second time the Government has asked its independent advisors, the Climate Change Committee to prepare the initial Independent Assessment.

Town and Country Planning EIA Regulations 2017

- 14.3.4 The requirement to consider impacts on climate change (mitigation) and vulnerability of developments to the impacts of climate change (adaptation) was transposed into UK via the amendments to the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (The EIA Regulations).
- 14.3.5 The EIA Regulations Schedule 2 (information to be included within the Environmental Statement) now provides direct reference to the consideration of climate change within the EIA.

Environmental Act 2021

- 14.3.6 The Environment Act, approved November 2021, aims to improve air and water quality, tackle waste, increase recycling, halt the decline of species, and improve the country's natural environment to make it more resilient to climate shocks. Specifically in relation to climate change, it introduces resource efficiency requirements and reporting obligations that include information about greenhouse gas emissions and makes an amendment of legislation on tree felling and planting.

Environmental Improvement Plan 2023

- 14.3.7 The Environmental Improvement Plan (EIP) 2023 for England is the first revision of the 25 Year Environmental Plan (25YEP) published in 2018. It builds on the 25YEP vision with a new plan setting out how government will work with landowners, communities and businesses to deliver 10 goals for improving the environment, matched with interim targets to measure progress.

Planning Policy

National Planning Policy

Building Regulations

- 14.3.8 The Building Regulations 2021 cover the construction and extension of buildings, they protect the health and safety of people in and around buildings, they also provide for energy and water conservation and access to and use of buildings. Approved documents provide practical guidance on about how to meet the requirements of the Building Regulations 2021.
- Part L: sets out the fabric energy efficiency standards and CO2 emission limits for dwellings and non-residential buildings. Compliance with these regulations is assessed against certain criteria, using the methodologies detailed in Part L, before a development can be

validated by building control. These regulations are the government's key mechanism for reducing CO2 emissions in buildings.

- Part O: details the regulations regarding overheating. The document states that suitable provision should be made to limit unwanted solar gains and to provide measures to remove heat from indoors.
- Part S: details the regulations in regards to the installation and requirements of infrastructure for electric vehicle charging points.

14.3.9 The Future Homes Standard is the upcoming newest edition of the Building Regulations and is expected to be released in 2025 and is currently expected to represent a further 49% reduction in carbon emissions over the current 2021 edition. Owing to current timeframes it is likely that the proposed development will be constructed in accordance with the Future Homes Standard.

National Planning Policy Framework (December 2024)

14.3.10 The National Planning Policy Framework sets out planning policy for England. It states that the purpose of the planning system is to contribute to the achievement of sustainable development and that the planning system has three overarching objectives, one of which (Paragraph 8C) is an environmental objective:

“to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating an adapting to climate change, including moving to a low carbon economy”.

14.3.11 Part 14 of the Framework is entitled “Meeting the challenges of climate change, flooding and coastal change” and sets out the strategy for minimising the climate change effects of new development. Paragraph 164 states that:

“New development should be planned for in ways that [...] can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards”.

14.3.12 Paragraph 165 states further that:

“to help the use and supply of renewable and low carbon energy and heat, plans should:

a) Provide a positive strategy for energy from these sources, that maximizes the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);

b) Consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure the development; and

c) Identify opportunities for development to draw its energy supply from decentralized, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.”

14.3.13 Paragraph 166 states that, when determining planning applications, planning authorities should expect new development to:

“a) comply with any development plan policies on local requirements for decentralized energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and

b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.”

Local Planning Policy

The West Suffolk Council Joint Development Management Policies Document (adopted 24 February 2015)

14.3.14 The Council adopted the West Suffolk Council Joint Development Management Policies Document in February 2015, which details the development and growth strategies for the local area up to 2031. Some key policies which directly tie into this climate change risk assessment is discussed below:

14.3.15 Policies DM6, DM7 and DM8 set out the strategic approach to sustainable design and construction. Strategies to ensure this is achieved include avoiding unacceptable flood risks, incorporating climate resilient design, promoting efficient use of resources such as energy and water, and providing opportunities for enhancing biodiversity. All major developments will be required to incorporate on-site renewable energy generation.

The West Suffolk Council Emerging Local Plan

14.3.16 Whilst not yet officially adopted, there are several policies within the West Suffolk Council Emerging Local Plan which are relevant to this document including SP1 and LP1.

Guidance

14.3.17 There is currently no prescribed methodology to use in the assessment of effects in respect of Climate Change. Several guidance publications have been produced containing suggested methods for establishing a baseline and limited advice on techniques for applying significance thresholds. These are by no means regulated standards, but in the absence of such, it is currently industry best practice to follow the guidance set out in:

- The Institute of Environmental Management and Assessment (IEMA): ‘Environmental impact assessment guide to assessing greenhouse gas emissions and evaluating their significance’ (2022)
- IEMA: ‘Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation’ (2020)

14.4 Assessment Methodology and Significance Criteria

Climate Change Mitigation

14.4.1 The method of assessment adopted to assess Climate Change Mitigation comprises the following components, in accordance with IEMA greenhouse gas guidance:

- Review of legislation, planning policy and guidance relating to climate change;
- Establish greenhouse gas emissions scope and boundaries;
- Establish current greenhouse gas emissions baseline for the Site;
- Estimate greenhouse gas emissions from the construction and operational phases of the development including emissions from traffic during construction and operation;
- Consider opportunities for greenhouse gas emissions reductions from the Proposed Development through appropriate mitigation measures in accordance with IEMA's greenhouse gas mitigation hierarchy; and
- Evaluate residual greenhouse gas emissions following mitigation within the context of baseline site conditions, local and regional greenhouse gas emissions and also future UK Carbon Budgets to establish their context, magnitude and significance.

14.4.2 It comprises calculating greenhouse gas emissions from the construction and operation of the Site and evaluating these emissions in the context of the baseline GHG emissions at the local authority administrative area level and regional level, as well as to future UK carbon budgets. Consideration is also given to the contribution (or otherwise) of the Site to the science-based net zero trajectory to the UK's 2050 net zero target. The scope and methods employed to calculate and estimate greenhouse gas emissions from the construction and operational phases of the development are detailed further in Appendix 14.1.

Climate Change Adaption

14.4.3 The method of assessment adopted to assess Climate Change Adaptation will comprises the following principle components:

- Review of legislation, regulations and planning policy, focusing on climate change adaptation and resilience issues;
- Identification of the existing baseline climatic conditions utilizing data from the Met Office together with the identification of relevant UKCP18 climate projections to establish future baseline conditions for the site;
- Preparation of a Climate Change Risk Assessment, which identifies risks to the development from the projected changes in climate factors;
- Preparation of a Summary Briefing Note for the EIA technical team based on the full Climate Change Risk Assessment to ensure they are utilizing the same information in relation to climate change;
- A qualitative assessment of potential effects and impacts of the future climate change scenario during the construction and operational phase of the development; and

- Identification of any mitigation measures that are necessary and a review of the residual impacts.

14.4.4 Full details of the Climate Change Risk Assessment which has been carried out for the site can be found in Appendix 14.2.

Identification of Sensitive Receptors

14.4.5 The below table details the receptors for the impacts of climate change covered in the Climate Change Risk Assessment (Appendix 14.2), and the designation of these receptors.

Table 14.2: Receptors

Designations	Receptors
International	Global climate – global carbon budgets
National	UK carbon budgets UK energy infrastructure UK climatic systems
Regional	Habitats and species
County	Construction site workers
Borough / District	Building occupants Employees Buildings and infrastructure Business operations
Local/Neighbourhood	Building operations

Environmental Impacts

14.4.6 The below table details magnitude of the potential impacts of climate change covered in the Climate Change Risk Assessment (Appendix 14.2), and the designation of these receptors.

Table 14.3: Magnitude of Environmental Impacts

14.4.7 The assessment has quantified emissions from the aspects of the whole life cycle of the each Planning Application considered to produce material greenhouse gas emissions, which have then been compared against the carbon budget/targets for the local region and the UK for construction and operational phases separately, in order to compare the percentage share of greenhouse gas emissions that the construction has on these carbon budgets, which aids the assessment of contextualized significance.

- 14.4.8 The assessment of projects on climate shall only report significant effects where increases in greenhouse gas emissions are considered to have a material impact on the ability of Government to meet its carbon reduction targets. A greenhouse gas assessment would be deemed significant if the quantification of the emissions is greater than 5% of the national, regional or local carbon budget used for contextualization.

Significance of Effects

- 14.4.9 The assessment will follow the recommendations and best practice contained within the IEMA guidance to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2017) when determining the magnitude and significance of effect for greenhouse gas emissions as well as the professional judgement of Environmental Economics Limited.
- 14.4.10 The IEMA principles of climate change mitigation and EIA in particular identify climate change as one of the defining environmental policy drivers of the future and that action to address greenhouse gas emissions is essential. The IEMA guidance takes the stance that all greenhouse gas emissions are significant and will contribute to future climate change. The greenhouse gas emissions expected as a result of each Planning Application have been quantified to ensure that it does not impede the UKs ability to meet future Carbon Budgets and the 2050 target.
- 14.4.11 A detailed greenhouse gas emissions assessment has been carried out to establish the baseline and future greenhouse gas emissions, and as a result of the each Planning Application. The calculated level of greenhouse gas emissions will be appraised within the context of current and future greenhouse gas emissions at the local, regional and national levels to determine magnitude and significance.
- 14.4.12 The climate change mitigation assessment takes into account the following types of emissions as a result of each Planning Application being developed will produce over its lifetime:
- Direct emissions – typically produced during construction and operation;
 - Indirect emissions – arising from the energy produced using fossil fuels during the operational phase;
 - Embodied carbon – as far as possible, encompassing the total impact of greenhouse gas emissions by the construction and materials of the built environment, including impacts of sourcing raw materials, manufacturing, transport and wastage in the process.

Construction Phase

- 14.4.13 The assessment process evaluated the effects of the construction phase on climate change.

Operational Phase

- 14.4.14 The assessment process evaluates the effects and impacts of the operational phase on climate change.

Limitations and Assumptions

- 14.4.15 The data for the assessment has been provided by the Architect and is up-to-date for the current design stage. In the absence of more project specific data, benchmark figures have been used.
- 14.4.16 More detail is currently available for the detailed application than for the outline hybrid application. This is due to the stage of planning that the two applications are presently at. Owing to the similarities in use between the two applications, it has been assumed that the same data can be utilised for each.
- 14.4.17 It is necessary to make a number of assumptions when carrying out the assessment. To account for some of the uncertainty in the approach, as described above, assumptions made have generally sought to reflect a realistic worst case scenario. Key assumptions made in carrying out this assessment include:
- Operational life.
 - Operational energy use is based on benchmark figures.
 - Specifications assumed the same between the two applications where data is not currently available.
- 14.4.18 The climate projections used will be from UKCP18 (United Kingdom Climate Projections 2018). The UKCP18 projections do not provide a single precise prediction of how weather and climate will change years into the future. Instead, UKCP18 provides ranges that aim to capture a spread of possible climate responses. There is considerable uncertainty regarding if, how far and how quickly emissions will be reduced in the future. Using RCP8.5 represents a conservative position. Other key caveats and limitations of UKCP18 data are presented on the Meteorological Website.
- 14.4.19 In addition, several components contribute to the uncertainty of greenhouse gas emissions as a result of the assumptions above. These limitations include the accuracy of future emissions, though these are based on the best available data which aims to provide the best estimate.

14.5 Baseline Conditions

The Site and Topography

- 14.5.1 For the purposes of assessing effects of the each Planning Application on climate change, the study area largely comprises the Hybrid Planning Application Site – which is considered appropriate given red lone of the Hybrid Application Site contain the Detailed Application Site.
- 14.5.2 Given upstream/downstream greenhouse gas emissions (such as from the manufacture of construction materials and the generation at a power station of mains electricity consumed by the operational development), however, the study area extends off site. Although the study area extends off-site the location of these off-site emissions cannot be determined at this stage, as the source of materials, location of materials manufacture or location of electricity generation (power station, renewable energy project etc.) is not known.
- 14.5.3 The Hybrid Planning Application is currently made up of a redundant brownfield site along with agricultural fields with some trees and other vegetation. There are also currently buildings on site which will require

demolition prior to commencement of the construction phase. Although there is likely to be minimal greenhouse gas emissions associated with on-site activities, a baseline of zero is considered to be appropriate for this assessment. The Greenhouse Gas Protocol recognizes that, whilst all relevant emissions sources should be accounted for so that a comprehensive and meaningful emissions inventory is compiled, lack of data or challenges in gathering certain data may in practice be a limiting factor. An assumption of zero emissions is considered worst case assumption and so appropriate for this assessment.

- 14.5.4 In the absence of any development (i.e. as a result of the Planning Applications) it is anticipated that the future baseline would evolve as per current day and therefore, site emissions would continue to be negligible and so assumed as zero for the purpose of this assessment.

14.6 Assessment of Effects, Mitigation and Residual Effects

Site Enabling and Construction

Effects

- 14.6.1 The construction phase of the Detailed Planning Application would have an adverse effect on climate, as it would give rise to emissions. These emissions originate from the production of materials to be used in construction and onsite construction activities. Emissions from construction activities are estimated based on an industry benchmark for average building construction site greenhouse gas emissions. See Appendix 14.1 for details on the calculation of the carbon emission values.

Table 14.4: Greenhouse Gas Emissions- Construction Phase (detailed application)

Parameter	Value
Total Construction Greenhouse Gas Emissions	1.40 ktCO ₂ e
Average Annual Construction Greenhouse Gas Emissions	0.47 ktCO ₂ e
Total Embodied Carbon Footprint	14.20 ktCO ₂ e

- 14.6.2 The relative emissions compared to the baseline are +0.47 ktCO₂e/yr.
- 14.6.3 This methodology adopts the good practice approach previously recommended by IEMA in 2017, which states that a project's carbon footprint should be contextualized against pre-determined carbon budgets concerning the relevant sector, the carbon footprint of the relevant local authority's carbon budget, and the carbon footprint of UK wide carbon budget.
- 14.6.4 Comparing the total construction phase greenhouse gas emissions to the UK Carbon Budget estimated for the construction period shows that the Site will constitute 0.0001256% of the total UK Carbon Budget for this period.

- 14.6.5 The above contextualization confirms that the construction phase greenhouse gas emissions are below the indicative threshold of 5% of the UK or local administrative carbon budgets, and therefore can be determined as Non-Significant.

Hybrid Application (Eastern and Western Parcels)

Effects

- 14.6.6 The construction phase of the Hybrid Planning Application would have an adverse effect on climate, as it would give rise to emissions. These emissions originate from the production of materials to be used in construction and onsite construction activities. Emissions from construction activities are estimated based on an industry benchmark for average building construction site greenhouse gas emissions. See Appendix 14.1 for details on the calculation of the carbon emission values.

Table 14.5: Greenhouse Gas Emissions – Construction Phase (hybrid application)

Parameter	Value
Total Construction Greenhouse Gas Emissions	4.55 ktCO ₂ e
Average Annual Construction Greenhouse Gas Emissions	1.52 ktCO ₂ e
Total Embodied Carbon Footprint	41.14 ktCO ₂ e

- 14.6.7 The relative emissions compared to the baseline are +1.52 ktCO₂e/yr.
- 14.6.8 This methodology adopts the good practice approach previously recommended by IEMA in 2017, which states that a project's carbon footprint should be contextualized against pre-determined carbon budgets concerning the relevant sector, the carbon footprint of the relevant local authority's carbon budget, and the carbon footprint of UK wide carbon budget.
- 14.6.9 Comparing the total construction phase greenhouse gas emissions to the UK Carbon Budget estimated for the construction period shows that the Site will constitute 0.0004083% of the total UK Carbon Budget for this period.
- 14.6.10 The above contextualization confirms that the construction phase greenhouse gas emissions are below the indicative threshold of 5% of the UK or local administrative carbon budgets, and therefore can be determined as Non-Significant.

Operation

Detailed Application (Easten Parcel)

Greenhouse Gas Emission Effects

- 14.6.11 The operational stage will give rise to emissions. Emissions from embodied carbon have been estimated based on the assessments completed using One Click LCA software. The proposed development's energy

demand has been estimated using the indicative site plan and SAP assessments. More details on these assessments can be found in Appendix 14.1.

Table 14.6: Greenhouse Gas Emissions – Operational Phase (detailed application)

Parameter	Value
First Year Development Operational Carbon Emissions	0.127 ktCO ₂ e
First Year Development Repair and Maintenance Emissions	0.08 ktCO ₂ e/yr
Total Development Greenhouse Gas Emissions (over 60-year period)	6.38 ktCO ₂ e

- 14.6.12 The relative emissions, compared to the baseline, are therefore +0.135 ktCO₂e/yr.
- 14.6.13 When compared against the UK Carbon Budget for the lifetime of the proposed development, the relative carbon emissions associated with the operational phase of the detailed application for the site make up 0.000055% of the UK's total carbon budget for the 60 year time period.
- 14.6.14 This confirms that the construction phase greenhouse gas emissions are below the indicative 5% of the UK or local authority carbon budgets, and therefore can be determined as Non-Significant.

Hybrid Application (Eastern and Western Parcels)

Greenhouse Gas Emission Effects

- 14.6.15 The operational stage will give rise to emissions. Emissions from embodied carbon have been estimated based on the assessments completed using One Click LCA software. The proposed development's energy demand has been estimated using the indicative site plan and SAP assessments. More details on these assessments can be found in Appendix 14.1.

Table 14.7: Greenhouse Gas Emissions – Operational Phase (Hybrid Application)

Parameter	Value
First Year Development Operational Carbon Emissions	0.371 ktCO ₂ e
First Year Development Repair and Maintenance Emissions	0.24 ktCO ₂ e/yr
Total Development Greenhouse Gas Emissions (over 60-year period)	18.5 ktCO ₂ e

- 14.6.16 The relative emissions, compared to the baseline, are therefore +0.611 ktCO₂e/yr.

14.6.17 When compared against the UK Carbon Budget for the lifetime of the proposed development, the relative carbon emissions associated with the operational phase of the detailed application for the project site make up 0.00025% of the UK's total carbon budget for the 60 year time period.

14.6.18 This confirms that the construction phase greenhouse gas emissions are below the indicative 5% of the UK or local authority carbon budgets, and therefore can be determined as Non-Significant.

Climate Change Adaptation Effects (both Planning Applications)

14.6.19 The climate change adaptation effects are expected to be the same for both Planning Applications. The two applications have therefore been combined in this section for succinctness.

14.6.20 The following potential effects have been assessed for significance from the Climate Change Adaptation Risk Assessment, due to having a medium or higher Likelihood of Risk. The significance of all effects has been concluded as Non-Significant, as shown in Table 14.8. A full assessment of the possible risks of climate change is provided in Appendix 14.2.

14.6.21 For the both Applications, the following climate change impacts displayed a medium or higher Likelihood of Risk:

Increased summer temperatures leading to:

- A decline in species and natural habitats;
- Overheating impacting health and wellbeing; and
- Increased energy demand for cooling and stress to energy infrastructure.

Decrease in summer rainfall leading to:

- Reduced water availability; and
- Poor water quality and supply interruptions.

Increase in winter rainfall leading to:

- Increased river flow and flood risk; and
- Surface water flood damage.

Changes in extreme weather patterns and severity leading to:

- Impacts on energy infrastructure.

14.6.22 The overall impact of the proposal in terms of climate change issues during the operational phase and prior to the consideration of mitigation is highlighted in the table below.

Table 15.8: Significance of Effect

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level
The release of greenhouse gas emissions associated with the use of fuel and electricity that will contribute to the effects of climate change.	High (UK Carbon Budgets)	Minor Negative	Minor Adverse	High
Decline in species and natural habitats due to increased summer temperatures.	Low (Habitats and Species)	Minor Negative	Minor Adverse	High
Overheating health and wellbeing impacts due to increased summer temperatures.	Low - Medium (Residents, Employees)	Moderate Negative	Moderate Adverse	High
Increased energy demand for cooling and stress to energy infrastructure due to increased summer temperatures.	Low (Buildings and Infrastructure)	Minor Negative	Minor Adverse	High
Reduced water availability due to a decrease in summer rainfall.	Low – Medium (Habitats and Species, Residents)	Moderate Negative	Minor Adverse	High
Poor water quality and supply interruptions due to a decrease in summer rainfall.	Low - Medium (Residents, Business Operations)	Minor Negative	Minor Adverse	High
Increase in fluvial flood risk and surface water flood risk due to increase in winter rainfall.	Low (Habitats and Species, Buildings and Infrastructure)	Minor Negative	Minor Adverse	High
Impacts to energy infrastructure due to strong winds from changes in extreme weather patterns.	Low – Medium (Buildings and Infrastructure, Residents, Business Operations)	Minor Negative	Minor Adverse	High

Mitigation (both applications)

- 14.6.23 Whilst this technical chapter relates to both the Detailed and Hybrid Planning Applications which are of differing scales, the mitigation recommendations remain the same for both applications.
- 14.6.24 In line with existing and emerging policies and regulations, the design process will continue to identify opportunities to explore measures to minimize the impact of the proposed development's carbon emissions, including the preferences with materials with lower embodied carbon. Action to achieve carbon reductions is the best taken during the design stage to utilize building design and fabric efficiency to reduce energy demand and to implement renewables to meet a proportion of that demand with clean energy.
- 14.6.25 All development will adhere to the Future Homes Standard, the newest set of Building Regulations which is expected to be released in 2025. The Future Homes Standard will set fabric efficiency standards, energy efficiency requirements and CO2 emissions limits for dwellings and non-residential buildings. Aside from any local planning policy requirements it must be demonstrated that a building is compliant with the building regulations and approved by building control. These regulations are the government's key mechanism for reducing CO2 emissions in buildings and will be embedded within the proposed development. The Future Homes Standard is expected to determine that dwellings should achieve a minimum of 49% reduction in CO2 emissions when compared with the previous 2021 edition.
- 14.6.26 Energy and Sustainability Reports (Appendices 14.3 & 14.4) have been produced for the two applications which put forward recommendations for energy efficient fabric specifications and Low or Zero Carbon Technology which can be utilized across the development. It should be noted that these recommendations are subject to change through detailed design stage until construction phase begins. Utilizing these recommendations would provide improvements above and beyond the Future Homes Standard.
- 14.6.27 A summary of recommendations can be found below:
- The energy hierarchy will be followed to maximize reduction of carbon emissions;
 - Electric heating rather than gas utilising air source heat pumps for low carbon emissions related to heating and hot water;
 - Renewable technology including solar photovoltaic panels to produce renewable energy.

Residual Effects (both applications)

- 14.6.28 Whilst this technical chapter relates to both the detailed and hybrid applications which are of differing scales, the potential residual effects remain the same for both applications.
- 14.6.29 At the outline planning stage it is difficult to predict with any certainty what the potential residual effect will be, owing to dependence on levels of energy reduction, efficiency and renewable energy generation decided upon at the detailed design stage.

Construction Phase

14.6.30 The overall impact of the proposal in terms of Climate Change and Greenhouse Gas issues during the construction phase is highlighted in the table below:

Table 14.9: Residual Effects – Construction Phase

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
Greenhouse gas emissions associated with the use of fuel and electricity which will influence climate change.	Global / UK Carbon Budgets	Minor Negative	Minor Adverse	High	None	Not Significant

14.6.31 It is considered that this magnitude of emissions from the proposed development during construction will not materially impact the Government's ability to meet the current UK Carbon Budget, and therefore will not have a significant effect on climate in this context.

Operational Phase

14.6.32 The overall impact of the proposal in terms of Climate Change and Greenhouse Gas issues during the operational phase is highlighted in the table below:

Table 14.10: Residual Effects – Operational Phase

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
The release of greenhouse gas emissions associated with the use of fuel and electricity that will contribute to the effects of climate change.	High (UK Carbon Budgets)	Minor Negative	Minor Adverse	High	None	Not Significant
Decline in species and natural habitats due to increased	Low (Habitats and Species)	Minor Negative	Minor Adverse	High	None	Not Significant

summer temperatures.						
Overheating health and wellbeing impacts due to increased summer temperatures.	Low - Medium (Residents, Employees)	Moderate Negative	Moderate Adverse	High	Adherence to Part O of the Building Regulations through overheating assessment including TM59 assessments. Where necessary, additional climate adaptation measures such as window orientation and openability, green infrastructure and solar shading will be considered.	Not Significant
Increased energy demand for cooling and stress to energy infrastructure due to increased summer temperatures.	Low (Buildings and Infrastructure)	Minor Negative	Minor Adverse	High	None	Not Significant
Reduced water availability due to a decrease in summer rainfall.	Low - Medium (Habitats and Species and, Residents)	Moderate Negative	Minor Adverse	High	None	Not Significant
Poor water quality and supply interruptions due to a decrease in summer rainfall.	Low - Medium (Residents, Business Operations)	Minor Negative	Minor Adverse	High	None	Not Significant

Increase in fluvial flood risk and surface water flood risk due to increase in winter rainfall.	Low (Habitats and Species, Buildings and Infrastructure)	Minor Negative	Minor Adverse	High	None	Not Significant
Impacts to energy infrastructure due to strong winds from changes in extreme weather patterns.	Low – Medium (Buildings and Infrastructure, Residents, Business Operations)	Minor Negative	Minor Adverse	High	None	Not Significant

14.6.33 It is considered that this magnitude of emissions from the proposed development during operation will not materially impact the Government's ability to meet the current UK Carbon Budget, and therefore will not have a significant effect on climate in this context.

14.7 Cumulative Assessment of Effects, Mitigation and Residual Effects

14.7.1 For the purposes of this ES we define the additive cumulative effects as:

'Those that result from additive impacts (cumulative) caused by other existing and/or approved projects together with the project itself'

14.7.2 The developments that are likely to have a cumulative impact when considered with the proposed development are set out in Chapter 2 of this ES.

14.7.3 A separate assessment of cumulative effects associated with the development in combination with other developments has not been undertaken as the approach taken to report on greenhouse gas emissions from the proposed development, in the context of baseline local emissions and future carbon budgets, is inherently a cumulative effects assessment (given that these baseline and future emissions account for greenhouse gas emissions from all sectors of the economy).

14.7.4 The second type of cumulative effect is that of the combination of various types of impacts from the proposed development. These are hereafter referred to as synergistic effects. The assessment of synergistic effects is undertaken by considering the how climate change directly or indirectly increases impacts on sensitive receptors within the other technical papers. This is addressed within the Climate Change Risk Assessment (Appendix 14.2). The mitigation of synergistic effects is possible through

thoughtful and informed design which acts to minimize the proposed development or surrounding receptors' vulnerability to effects, such as:

- Recommending a mix of green infrastructure and SuDS to manage flooding (Water Environment –Chapter 7);
- Ensuring the retention of existing trees and vegetation (where possible) to protect ecology and habitats from further decline (Ecology- Chapter 8);

14.7.5 Further details of the cumulative effects described above, along with others, can be found in the Climate Change Risk Assessment (Appendix 14.2) and the individual disciplines' papers.

14.8 Summary

14.8.1 Based on the available design details related to key items like waste, materials, water and energy, a quantitative assessment has been undertaken which quantifies emissions from the elements to identify the potential for significance effects.

14.8.2 In regards to the Detailed Planning Application, the development's operational emissions were calculated as +6.38 ktCO₂e for the lifetime of the development (excluding embodied carbon).

14.8.3 For the hybrid application, the proposed development's operational emissions were calculated as +18.5 ktCO₂e for the lifetime of the development (excluding embodied carbon).

14.8.4 Using the methodology established, these figures both represent a minor adverse impact of non-significance for the operational phase of the development.

14.8.5 The IEMA guidance states that all greenhouse gas emissions should be considered significant, however, greenhouse gas impacts should be put into context in terms of their impacts on the UK's five-year carbon budgets, including sub-sectoral budgets for energy generation, which set legally binding targets for greenhouse gas emissions. Only where the assessment of projects on climate results in an increase in greenhouse gas emissions which are considered to have a material impact on the ability of the Government to meet its carbon reduction targets should be considered as significant.

- Detailed application - The total contribution to the UK Carbon Budget would be 1.40 ktCO₂e, equating to 0.00013% of the total UK Carbon Budget from construction emissions over the construction phase.
- Detailed application - The total contributions to the UK Carbon Budget would be 6.38 ktCO₂e equating to 0.000097% of the total UK Carbon Budget from emissions over the 60 year lifetime of the development.
- Hybrid application - The total contribution of the proposed development to the UK Carbon Budget would be 4.55 ktCO₂e, equating to 0.00041% of the total UK Carbon Budget from construction emissions over the construction phase.

- Hybrid application - The total contributions of the proposed development to the UK Carbon Budget would be 18.5 ktCO₂e equating to 0.00028% of the total UK Carbon Budget from emissions over the 60 year lifetime of the development.

14.8.6 It is considered that this magnitude of emissions from the will not materially impact the Government's ability to meet the budget, and therefore will not have a significant effect on the climate in this context.

14.8.7 The Energy and Sustainability Reports (Appendices 14.3 & 14.4) have demonstrated that through renewable technology considerations at the detailed design stage, the applicant has the potential to further reduce the impact of the developments. Other commitments at detailed design stage such as sustainable design and energy efficiency standards will further reduce this impact.

A cumulative effects assessment was not independently undertaken as the nature of the greenhouse gas assessment contextualizing against local emissions and future carbon budgets is inherently a cumulative effects assessment. Synergistic effects of climate change on sensitive receptors within the other technical papers were mitigated through approaches such as green infrastructure and SuDS to manage flooding and ensuring the retention of existing trees and vegetation (where possible) to protect ecology and habitats from further decline; further detail can be found within the respective disciplines' papers and the Climate Change Risk Assessment (Appendix 14.2).

Table 14.11: Summary of Key Results

Parameter	Value	Significance
Detailed application total emissions	6.38 ktCO ₂ e	Less than 5% of UK carbon budget for development life cycle so not significant
Hybrid application total emissions	18.5 ktCO ₂ e	Less than 5% of UK carbon budget for development life cycle so not significant
Residual impacts from development	Not significant	None of the residual impacts resulting from the proposed development have been found to be significant



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