Land South of Radwinter Road (East of Griffin Place), Saffron Walden
Rosconn Strategic Land
July 2021

BIDWELLS

Environmental Statement
Volume 1 - Main Report

ROSCONN
STRATEGIC LAND

Quality Assurance

Quality Assurance

Site name:	Land South of Radwinter Road (East of Griffin Place), Saffron Walden
Client name:	Rosconn Strategic Land
Type of report:	Environmental Statement
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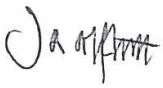
Signed	
Date	July 2021

A copy of the Environmental Statement and Appendices may be viewed by prior appointment at Uttlesford District Council, Council Offices, London Road, Saffron Walden, CB11 4ER.

Paper copies of the Environmental Statement, together with the technical appendices can be purchased from Bidwells at a cost of £350.00. Alternatively, a CD containing the documents can be provided at a cost of £15 (prices are inclusive of VAT). The Non-Technical Summary is available free of charge.

Comments on the Environmental Statement should be directed in writing to Uttlesford District Council at the address above.

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Technical Quality Assurance

Technical Quality Assurance

For each of the topic chapters included within this Environmental Statement, the relevant consultants responsible for their production have confirmed the technical robustness of the assessment process.

CHAPTER	ORGANISATION	AUTHOR	AUTHOR'S SIGNATURE
Agriculture	Land Research Associates	Mike Palmer	
Air Quality	Kairus Ltd	Jo Kirk	
Ecology	harrislamb Property Consultancy	Holly Smith	
Flood Risk and Drainage	Cotswold Transport Planning	Ben Fleming	
Landscape and Visual	DEFINE	Holly Colson	
Noise and Vibration	ra resound acoustics	Mike Brownstone Andrew Moseley	
Socio-Economics and Health	RSK	David Horrock Nisha Rehm	
Transport	Cotswold Transport Planning	Chris Elliott	

Statement of Competency

Statement of Competency

This Environmental Statement has been prepared by competent experts. Relevant expertise and qualifications of the expert team are outlined below.

DISCIPLINE	CONSULTANT	AUTHOR, RELEVANT QUALIFICATIONS AND EXPERTISE
EIA Coordinator and ES editor, authors of chapters not otherwise specified below.	BIDWELLS	**Caroline Rodger PIEMA**, 2 years' experience in EIA. **James Alflatt**, **MRTPI PIEMA**, 15 years' experience in EIA coordination, and Registered EIA Practitioner of IEMA.
Agriculture	Land Research Associates	**Mike Palmer** This chapter has been produced by Dr Mike Palmer, Director of Land Research Associates Ltd. Mike Palmer has over fifteen years of consultancy experience and is a professional member of the British Society of Soil Science. The chapter has been cross checked by Laura Thomas, Soil and Land Consultant of Land Research Associates Ltd. Laura Thomas has six years' consultancy experience and is working towards professional membership of the British Society of Soil Science.
Air Quality	Kairus Ltd	**Jo Kirk** Jo has over 20 years' experience as an environmental professional with a strong technical background in the field of air quality. She has an MSc in Environmental Sciences and a BSc in Environmental Biology. She is also a member of the Institute of Air Quality Management (MIAQM) and a member of the Institute of Environmental Science (MIEnvSc). Having worked for some of the largest environmental consultancies in the UK she has gained extensive experience of managing a wide range of projects and working successfully with a broad spectrum of clients, including developers, architects, planning consultants, builders and regulatory authorities.
Ecology	harrislamb PROPERTY CONSULTANCY	**Holly Smith** The EcIA was prepared by Dr Holly Smith, a full member of the Chartered Institute for Ecology and Environmental Management (CIEEM) with over 15 years' professional ecological consultancy experience. Holly has prepared numerous Environmental Statements under the IEMA EIA Quality Mark. The Badger Survey was undertaken by Stuart Silver, a full member of CIEEM with over 15 years' experience and who holds a Natural England CL35 badger licence. Dormice and Bat Surveys were overseen by licenced dormice and bat ecologist, James Pattenden, who is a full member of CIEEM and who holds licences for both species.
Flood Risk and Drainage	COTSWOLD TRANSPORT PLANNING	**Ben Fleming BSc (Hons)** Ben has over 16 years' experience of working in the water industry and has specialised in providing flood risk and drainage advice relating to the development planning process. Career progression through this time has led to his present position as a Principal Flood Risk Consultant within the Infrastructure team based at Cotswold Transport Planning's office in Cheltenham, Gloucestershire and becoming a Chartered Member of the Chartered Institute of Water and Environmental Management (CIWEM).
Landscape and Visual	DEFINE	**Holly Colson** 2009 Chartered Member of the Landscape Institute 2005 Masters of Landscape Architecture (Newcastle University) 2003 BA (Hons) Geography (Durham University) Holly is a Chartered Member of the Landscape Institute with over fifteen years' experience in the preparation of Landscape and Visual Impact Assessments, landscape led masterplans, green infrastructure strategies and public realm design. These exercises are often undertaken to shape and assess development in the context of highly sensitive and historic natural and urban environments.

DISCIPLINE	CONSULTANT	AUTHOR, RELEVANT QUALIFICATIONS AND EXPERTISE
Noise and Vibration		Resound Acoustics is a member of the Association of Noise Consultants, and all its consulting staff are full members of the Institute of Acoustics (MIOA). The assessment has been overseen by a director of Resound Acoustics, who has 28 years' experience in the assessment of noise and vibration impacts associated with residential development, transportation schemes, waste and power generation projects, wind farms, and construction projects, in both national and international settings. The director has given evidence at planning inquiries and appeal hearings, and at nationally significant infrastructure project examinations and holds a BEng in Engineering Acoustics and Vibration. The Noise and Vibration Assessment has been undertaken by an acoustic consultant with 8 years' experience in the assessment of noise and vibration impacts associated with residential development, transportation schemes, and construction projects, and holds a BSc in Music Technology and has been awarded the Institute of Acoustics' Diploma in Acoustics and Noise Control.
Socio-Economics and Health		**David Horrocks** was the Human Health lead within the combined Socio-economic and Human Health ES Chapter. David has a Masters degree in Environmental Impact Assessment and Management and is a Practitioner member of IEMA (PIEMA). David has over four years of experience in the environmental and planning sector and has previously authored Health chapters for Environmental Statements in relation to residential developments. He has also led the writing of a large scale ES for a residential development in the north west of England and has had EIA input into other similar schemes. **Nisha Rehm** was the socio-economic lead with the combined Socio-economic and Human Health ES Chapter. Nisha has a Masters degree in Environmental Management and Assessment and is a Practitioner member of Institute of Environmental Management and Assessment (PIEMA) and Full Member of the Institution of Environmental Sciences (MIEnvSc). Nisha has over 10 years' experience in the environmental sector and has previously worked on socio-economic assessments for three residential developments.
Transport		**Chris Elliott** The Transport Chapter of was prepared by Cotswold Transport Planning (CTP) whose staff have extensive experience of working on similar schemes which require Environmental Statements. The Team whom have worked on this chapter and the supporting documents include a variety of highly qualified and highly experienced staff. The project lead has been Chris Elliott, Regional Director with 18 years' experience in the field of transport planning. Chris is a member of the Chartered Institute of Highways and Transportation and has a BSc (Hons) degree in Human Geography from Brunel University. Chris has managed input to projects requiring Environmental Statements including Southall Gasworks (3,750 dwellings), Deptford Wharves (1,100 dwellings) and Henley Gate, Ipswich Garden Suburb (1,100 dwellings).

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List of Abbreviations

List of Abbreviations/Glossary

ADMS	Atmospheric Dispersion Modelling System
Ancient woodland	An area that has been wooded continuously since at least 1600 AD
Anglian Water	The water and sewerage company serving the East of England.
Annual Exceedance Probability (AEP)	The probability, expressed as a %, of a flood event occurring in any year. A large flood which may be calculated to have a 1% chance of occurring in any one year is described as 1% AEP
AQAL	Air Quality Assessment Level
AQC	Air Quality Consultants Ltd
Aquifer	A layer of rock beneath the ground which is permeable and holds groundwater
Asset	Flood risk assets are structures which are used to manage flood risk e.g., defences such as walls and embankments, pumping stations, culverts, trash screens, flood gates, and channels. Operating our assets means activities like closing flood gates, operating pumps, closing barriers and clearing channels and trash screens
ATC	Automatic Traffic Count
Attenuation	The slow release of stored water or water runoff back into a surface water body or watercourse
Avoidance	Prevention of impacts occurring, having regard to predictions about potentially negative environmental effects (e.g. project decisions about site location or design)
BGS	British Geological Survey
Biodiversity	The biological diversity of the earth's living resources. The total variability among organisms and ecosystems. In common usage, and within these Guidelines, biodiversity is used to describe the conservation of the natural environment, rather than describing the variation within it
BS	British Standard
Catchment	The total area of land, including hills, mountains and woodlands, within a drainage basin where water drains and is collected before flowing into streams, rivers, lakes and tarns
CCG	Clinical Commissioning Group
CEMP	Construction Environment Management Plan
CIEEM	Chartered Institute for Ecology and Environmental Management
CIRIA	Construction Industry Research and Information Association
CLH	Previously known as the Government Pipeline and Storage System (GPSS) it is the main fuel pipeline and storage facility network in the UK
CLOCS	Construction Logistics, Cycle Safety and Work Related Road Risk Scheme
Connectivity	A floodplain can only serve as a floodplain to a river if they are connected and there is no barrier between the two, for example, concrete banks to encourage a faster flow through an area. By removing barriers and improving connectivity, the river is able to flood and water and material flows and is deposited on the floodplain, as opposed to further downstream creating a flood risk elsewhere
Convey	To transport water from one place to another e.g., by means of a river flowing
CRTN	Calculation of Road Traffic Noise
CTMP	Construction Traffic Management Plan
CTP	Cotswold Transport Planning
Culvert	A covered channel or pipeline used to continue a watercourse or drainage path under an artificial obstruction, such as a road or railway

Cumulative Effects	The summation of effects that result from changes caused by a development in conjunction with other past, present or reasonably foreseeable actions
DaRT	Demand Responsive Transport
dB	Decibel
DEFRA	Department for Environment, Food and Rural Affairs
Department for Environment, Food and Rural Affairs (DEFRA)	Defra is responsible for safeguarding the natural environment, supporting the world-leading food and farm industry and sustaining a thriving rural economy. They also have overall national responsibility for policy on flood and coastal erosion risk management and provides funding for flood risk management authorities through grants to the Environment Agency and local authorities
DMP	Dust management plan
DMRB	Design Manual for Roads and Bridges
Downstream	An area situated in the direction in which a river or other watercourse flows
Drainage basin	The total area of land drained by a river and its tributaries
Drainage system	Drainage systems can either be natural or man-made. Natural drainage systems are all of the rivers, streams and other tributaries in a drainage basin that collect water and precipitation. Man-made drainage systems include agricultural drainage systems, and urban drainage systems which dispose domestic and industrial sewage or wastewater
EA	Environment Agency
ECC	Essex County Council
EcIA	Ecological Impact Assessment
ECOW	Ecological Clerk of Works
EFT	Emission Factor Toolkits
EIA	Environmental Impact Assessment
EIA Planning Regulations	In England and Wales these are The Town and Country Planning (Environmental Impact Assessment) Regulations 2017, plus amendments
Environment Agency (EA)	A government body which was set up in 1996 to protect and improve the environment. They are responsible for waste management and regulating major industry, treatment of contaminated land, fisheries, water quality and resources, river, estuary and harbour navigations, conservation and ecology and managing the risk of flooding
EPUK	Environmental Protection UK
Erosion	Where soil, sand and rock is gradually worn away by the action of rain, rivers, wind or waves
ES	Environmental Statement
EV	Electric Vehicle
FFL	Finished Floor Level
FIT	Fields in Trust
Flash flooding	Flooding that happens very suddenly, usually due to heavy rainfall or a storm
Flood	The temporary overflowing of water on to an area of land which is usually dry
Flood defence	A structure or system of structures built to reduce the risk of flooding from rivers or the sea
Flood peak	The largest discharge of water during a flood at a certain point in a river. Also known as peak discharge
Flood resilience	A community's or an individual's ability to prepare for and recover quickly from flooding
Flood resistance	Physical measures put in place that aim to prevent flood water entering a property
Flood risk	Determined by the frequency or likelihood of a flood event happening, and the consequences of the flood if it did occur
Flood Risk Assessment (FRA)	This is an assessment which includes the flood risk to an area from varying sources of flooding, along with the identification of flood mitigation measures and advice on what courses of action to take both before and during a flood event

Flood zones	These zones signify the probability of river or sea flooding in a particular area. The probability values ignore the presence of any flooding or sea defences
Floodplain	The area of land directly adjacent to a river which experiences flooding during periods of high discharge and is made up of deposited sediments from a river during a flood
Fluvial flooding	This means river flooding and is when a river overtops and overflows as a result of sustained or intense rainfall
FORS	Fleet Operation Recognition Scheme
FRA	Flood Risk Assessment
Geomorphology	Processes of erosion, deposition and sediment transport that influence the physical form of a river and its floodplain
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GP	General Practitioner
Greenfield	An undeveloped plot of land
Groundwater	Water found beneath the ground, stored in the cracks and gaps in soil, sand and rock, and in aquifers
Habitat	The place or type of site where an organism or population naturally occurs. Often used in the wider sense referring to major assemblages of plants and animals found together
HDV	Heavy duty vehicle
HGV	Heavy Goods Vehicle
HIA	Health Impact Assessment
HSI	Habitat Suitability Index
HUDU	Healthy Urban Development Unit
IAQM	Institute of Air Quality Management
IEMA	Institute of Environmental Management and Assessment
Infiltration	This is the process in which water at the ground surface enters the soil in to the subsurface
INNS	Invasive non-native species
km	Kilometres
Lead Local Flood Authority (LLFA)	This will be either the District Council, provided it is a Unitary Authority, or the County Council. LLFAs are responsible for developing, maintaining and applying a strategy for local flood risk management in their areas and for maintaining a register of flood risk assets. They also have lead responsibility for managing the risk of flooding from surface water, groundwater and ordinary watercourses
LEMP	Landscape and Ecological Management Plan
LIA	Local Impact Area
LLFA	Lead Local Flood Authority
LOAEL	Lowest Observed Adverse Effect Level
Local flood risk management strategy	Under the Flood and Water Management Act 2010, the Lead Local Flood Authority (LLFA) is required to produce a Local Flood Risk Management Strategy. It is a high level, statutory document which sets out the LLFA's approach to reducing the impacts of local flooding across the authority's area. It also promotes greater partnership working arrangements between those organisations with a responsibility for managing local flood risk and provides a strategic framework within which the various 'Risk Management Authorities' must work
Local Planning Authority (LPA)	The public authority whose duty it is to carry out specific planning functions for a particular area. All references to local planning authority apply to the district council, London borough council, county council, Broads Authority, National Park Authority and the Greater London Authority, to the extent appropriate to their responsibilities

LSOA	Lower-Layer Super Output Areas
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Sites
m	Metres
Main river	Usually, larger rivers and streams that are designated as a 'main river' on the Environment Agency's Main River Map. The Environment Agency carry out maintenance, improvement and construction work on these main rivers to manage flood risk
mAOD	Metres Above Ordnance Datum
mbgl	Metres Below Ground Level
Mitigation	Any process, activity or thing designed to avoid, reduce or remedy adverse environmental impacts likely to be caused by a development project
mm	Millimetres
National Planning Policy Framework (NPPF)	Provided by the government to make the planning system more accessible and less complex by reducing and simplifying the policy pages about planning. It is a guide for local planning authorities and decision makers for drawing up plans and making decisions about planning applications
NHS	National Health Service
NO2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPPG	National Planning Practice Guidance
Offline storage	The water within the channel is diverted using an intake structure and stored in a separate area. The water is then released back into the river or to another watercourse using an outlet structure. The separate storage area may be in the form of a reservoir and is usually situated on the floodplain
Online storage	This is the temporary storage of water within the river channel and its flood plain. The water may be held back by an impoundment structure and slowly released by a flow control structure. A spillway may also be used to slowly release larger volumes of flood water
ONS	Office for National Statistics
Ordinary watercourse	These include watercourses such as rivers, brooks, becks, ditches, streams and culverts. The Lead Local Flood Authority or the Internal Drainage Board are responsible for flood risk and flood defence works on these watercourses
OS	Ordnance Survey
PBA	Peter Brett Associates
PCU	Passenger Car Unit
Permeable	Type of ground or material that allows water to pass through it
PFR	Potential Roosting Features
PHE	Public Health England
PIC	Personal Injury Collision
Pinch points	The narrowing of a river channel caused by an accumulation of silt
Planning Practice Guidance (PPG)	This was published by the Government in March 2016. The aim of it is to ensure that "the Planning system allows land to be used for new homes and jobs, whilst protecting valuable natural and historic environment." Over 7000 pages of planning guidance used to be in separate documents, and it is now on one single hard copy, online and it should be read alongside the National Planning Practice Guidance Framework
Pluvial flooding	Also known as surface water flooding, this type of flooding occurs when there is intense rainfall which saturates the ground and drainage systems, and excess water cannot be absorbed

$PM_{2.5}$ and PM_{10}	Particulate Matter
Pollutant	A substance that is bad or harmful to the environment it is in
PPV	Peak Particle Velocity
PRoW	Public Right of Way
RAMS	Reasonable Avoidance Method Statement
Reservoir	Large, impounded waterbody
Riparian	The area related to or at the edge of a river.
Riparian owner	Somebody who has a watercourse, such as a river, stream or beck, which runs through, under or alongside the boundary of their property. They are responsible for maintaining the bed and banks of the watercourse, which is on their property. Also known as a 'watercourse owner'
Riverbed	The bottom of a river channel which the river flows over
RM	Reserved Matters
Runoff	The excess water that the land cannot absorb which flows over the surface or via through flow into rivers and streams etc. Runoff can be produced from both natural processes and human activity
s	Seconds
SAC	Special Area of Conservation
SFRA	Strategic Flood Risk Assessment
Site of Special Scientific Interest (SSSI)	Areas protected by law to conserve their geology or wildlife. If land has been identified as an SSSI, you will be required to gain consent from Natural England before carrying out certain activities. They can be used in neighbourhood planning to decide whether areas in a particular neighbourhood are suitable for development
SOAEL	Significant Observed Adverse Effect Level
Soil compaction	When soil is pressed together tightly from animals and machinery and cannot let air and water through
SPA	Special Protection Area
SPZ	Source Protection Zones
Standard of protection	The minimum height or amount of time a measure or equipment has to serve its purpose before failing
Strategic Flood Risk Assessment (SFRA)	An assessment of flood risk in an area and the risks to and from neighbouring areas. It is used to aid in supporting and helping with planning decisions
SuDS	Sustainable Drainage System
Surface water	This is water that falls as rain and collects on the ground surface, before flowing into drains and gullies or percolating into the ground below
Sustainable drainage systems (SuDS)	These mimic natural drainage patterns to manage rainfall and surface water runoff close to the source. They manage the transport of water and the speed that it runs off hard surfaces before it enters watercourses. They can be designed to store water and control its infiltration into the ground to allow for evaporation and transpiration
TA	Transport Assessment
TEMPro	Trip End Model Presentation Program
Terminology	Explanation
TN	Target Notes
Topography	The surface profile of landforms and features
TP	Travel Plan
TRICS	Trip Rate Information Computer System
TRL	Transport Research Laboratory

UDC	Uttlesford District Council
Unitary Authority	One level of local government in some large towns, cities or small counties which provide all local services for the area. They act as the lead local flood authorities (LLFA) and are responsible for managing the risk of flooding from surface water, groundwater and ordinary watercourses in that area
Watercourse	This includes all rivers, streams, ditches, drains, culverts, dikes, etc. through which water flows
Watercourse owner	A watercourse owner owns the stretch of a particular water course, such as a river or stream etc, which either runs on or under your land or on the boundary of your land, up to the rivers centre. Also known as a 'riparian owner'
WHO	World Health Organisation
WIA	Wider Impact Area
ZTV	Zone of Theoretical Visibility

Introduction

1

1.0 Introduction

1.1 Bidwells LLP have been instructed by Rosconn Strategic Land (thereafter referred to as 'the Applicant') to undertake an Environmental Impact Assessment (EIA) under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (hereafter 'the EIA Regulations') to accompany an outline planning application to Uttlesford District Council (UDC) ('the Council') for residential development on Land South of Radwinter Road (East of Griffin Place), Saffron Walden.

1.2 The Environmental Statement (ES) will support an outline application for the erection of up to 233 residential dwellings including affordable housing, with public open space, landscaping and sustainable drainage system (SuDS) providing a vehicular access point from Radwinter Road.

1.3 This document is the main volume of the ES, which reports the findings of the EIA. The ES is organised into three main volumes:

- Volume 1: Main Report (this document);
- Volume 2: Technical Appendices (providing detailed assessment in relation to particular issues); and
- Volume 3: Non-Technical Summary (NTS) providing an overview of the main findings and recommendations reported in the ES.

Need for the Environmental Statement

1.4 Certain types of development are required to be the subject of EIA ("EIA development"). Schedule 1 of the EIA Regulations lists the type and scale of development that automatically require EIA. Schedule 2 of the EIA Regulations sets out the development types that may require EIA ("Schedule 2 development"). To qualify as a Schedule 2 development, it must be either located in a "Sensitive Area" as defined in Regulation 2(1) or exceed the applicable threshold in Schedule 2. Not all Schedule 2 development will require EIA and they consequently need to be screened on a case-by-case basis using the criteria set out in Schedule 3 of the Regulations.

1.5 The proposal in this case does not qualify as a Schedule 1 development and is not located within or close to a Sensitive Area. It is, however, of a type and scale that falls within Schedule 2(10) 'Infrastructure Projects' - specifically 10(b) 'Urban Development Projects'.

1.6 In accordance with the EIA Regulations, given the size, scale and nature of the Proposed Development, likely significant environmental effects at this stage could not be ruled out in the absence of measures to reduce these effects. Accordingly, the Applicant has volunteered to conduct an EIA to fully assess the likely significant environmental effects of the Proposed Development upon the receiving environment.

Purpose of the EIA

1.7 The National Planning Practice Guidance (NPPG) sets out the aim of an EIA is to:

"Protect the environment by ensuring that a local planning authority when deciding whether to grant planning permission for a project, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision-making process…"

The aim of Environmental Impact Assessment is also to ensure that the public are given early and effective opportunities to participate in the decision-making procedures." NPPG (Department for Housing, Communities and Local Government (DCHLG) 2020) Paragraph: 002 Reference ID: 4-002-20140306).

1.8 In enabling the systematic examination of effects from a proposal, EIA facilitates refinement of an emerging development proposal to minimise adverse impacts on the environment and to maximise beneficial consequences. EIA, as reported in the ES, seeks to ensure that the likely significant environmental effects of a development proposal are understood by the decision makers and taken into account in evaluating the proposal. The ES also provides information to interested parties, thereby facilitating participation in the decision-making processes.

Scope of the EIA

1.9 Regulation 15 of the EIA Regulations allows applicants to request a 'Scoping Opinion' from the relevant competent authority as to the content of the EIA and the information to be provided in the ES. The Scoping Opinion provides clarity on content and methodology.

1.10 The scoping process followed for the Proposed Development is detailed in Chapter 2. In summary, this concluded that the Proposed Development had the potential to give rise to likely significant environmental effects upon the following aspects and, as such, these have been volunteered by the Applicant to be included in the EIA:

- Agriculture;
- Air Quality;
- Ecology;
- Flood Risk and Drainage;
- Landscape and Visual;
- Noise;
- Socio-Economics and Health; and
- Transport.

1.11 This work has been undertaken and is now reported in this ES.

Environmental Statement Structure

1.12 Volume 1 of the ES (this volume) contains the main findings of the EIA. It is presented as a series of chapters structured as follows:

Chapter 1	Introduction
Chapter 2	Methodology
Chapter 3	Site and Context
Chapter 4	Proposed Development including Alternatives
Chapter 5	Planning Policy Context
Chapter 6	Agriculture
Chapter 7	Air Quality
Chapter 8	Ecology
Chapter 9	Flood Risk and Drainage

Chapter 10	Landscape and Visual
Chapter 11	Noise and Vibration
Chapter 12	Socio-Economics
Chapter 13	Transport
Chapter 14	Cumulative Effects
Chapter 15	Conclusions

Volume 2

1.13 A number of technical reports have been produced to accompany the planning application. Those technical reports relied on in the EIA are compiled in the ES Volume 2 for completeness.

Volume 3

1.14 This volume provides a relatively short, non-technical summary of the outcomes of the EIA as reported in the ES. This is a useful starting point for readers of the ES and is presented separately.

Project Team

1.15 The production of this ES has been coordinated by Bidwells and presents the results of the EIA process carried out by a number of specialist consultants, on behalf of the Applicant. The EIA team is part of a wider design team. The roles and responsibilities of each member of the team are summarised in **Table 1.1.** As required by the EIA Regulations, the ES has been prepared by competent experts, and a statement of competency is presented at the beginning of Volume 1 of the ES.

1.16 **Table 1.1: EIA and Design Team**

ENVIRONMENTAL ASPECT	CONSULTANT
Agriculture	LRA
Air Quality	Kairus
Ecology	Harris Lamb
Flood Risk and Drainage	CTP
Landscape and Visual	Define
Noise and Vibration	Resound Acoustics
Socio-Economics	RSK
Transport	CTP

Conclusion

1.17 The methodology and approach that has been adopted for the preparation of this ES is outlined in Chapter 2.

Methodology and Scope

2.0 Methodology and Scope

Introduction

2.1 This chapter describes the background and methodology used for undertaking the EIA and defines the scope of assessment and sets out the approach for reporting this assessment within the ES.

EIA Objectives

2.2 The key objectives of the EIA are as follows:

- To establish existing/baseline environmental conditions;
- To identify, predict and assess the significance of the environmental effects of the Proposed Development; and
- To identify mitigation, enhancement and monitoring measures to prevent, reduce or remedy significant adverse effects and maximise beneficial effects of the Proposed Development.

General Approach

2.3 The EIA process, generally, has comprised the following stages (**Figure 2.1**).

2.4 This ES has been prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (as amended) ("the EIA Regulations"). These Regulations translate the requirements of the European Union Directive 2014/52/EU on the Assessment of the Effects of Certain Public and Private Projects on the Environment ("the EIA Directive"). Amendments to the EIA Regulations include those which continue to implement EIA on the United Kingdom (UK)'s exit from the European Union ("The Environmental Assessments and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018"), as well as changes to publicity and hard copy requirements under the coronavirus pandemic ("The Town and Country Planning (Development Management Procedure, Listed Buildings and Environmental Impact Assessment) (England) (Coronavirus) (Amendment) Regulations 2020").

2.5 The EIA has also been prepared with regard to other guidance, as detailed below, including:

- EIA Guide to Delivering Quality Development (Institute for Environmental Management and Assessment (IEMA) 2016);
- EIA Guide to Shaping Quality Development (IEMA 2015);
- NPPG (Ministry of Housing, Communities & Local Government (MHCLG 2018); and
- Guidelines for EIA, (IEMA 2004).

Step 1

Establish receptors that could be affected by the development and their sensitivity
As determined through baseline studies on the local environment.

Step 2

Impact characterisation
Description of the potential changes brought about by the development on the sensitive receptors.

Step 3

Cumulative impact characterisation
Identification of incremental/additional impacts due to past, present and reasonably foreseeable future actions.

Step 4

Impact significance assessment
Consideration of the nature and scale of impact characteristics, combined with the importance/sensitivity of receptors to produce a judgement of overall significance.

Step 5

Consider need for mitigation
If significant environmental impacts are deemed unacceptable, opportunities for reducing their nature, scale, duration or geographical extent may be available through re-design or alternative methods of development. These should be considered by the developer and committed to as appropriate to reduce the significance of environmental effects.

Step 6

Assess significance of residual impacts
Where the developer has committed to undertaking mitigation to reduce the predicted significance of environmental effects, the overall significance can be re-assessed to show the predicted change from baseline conditions with successful mitigation in place.

Step 7

Monitoring and management strategies
The success of mitigation measures may need to be monitored in order to ensure impacts are no worse than those predicted.

Figure 2.1 Environmental Impact Assessment Process

Assessment Method and Criteria

Approach

2.6 This EIA has assessed the Proposed Development based on the application for an outline planning application, therefore, a series of Parameter Plans (**Appendix 4.1** of Volume 2 of this ES) have been developed as part of the design process in order to set the framework for the Proposed Development. These include the following:

- Land Use Parameter Plan: This defines the general description and broad location of the proposed land use components within the Site, including areas of built development and areas of open space and landscaping;
- Green Infrastructure Parameter Plan. This defines the parameters for key strategic areas of public realm, structural landscaping and ecological areas within the Site;
- Access and Movement Parameter Plan: This defines the hierarchy of access and main circulation routes for both vehicles and pedestrians and the limits of deviation within which these routes will be positioned; and
- Building Heights Parameter Plan: This defines the maximum heights of the built development across the Site, based on the structure of the Land Use Parameter Plan.

2.7 A description of the Proposed Development is provided in Chapter 4 of this ES. The Parameter Plans in **Appendix 4.1**, relevant explanatory and illustrative detail within the Design and Access Statement, the Proposed Development Description and associated appendices, and any points of elaboration in the technical chapters, form the basis of the EIA.

Definitions of Impacts and Effects

2.8 For clarity, attention has been taken in this ES to distinguish between environmental impacts and environmental effects. These are defined as follows:

- Environmental Impacts: the process whereby a change, which may be beneficial or adverse or both, is brought about in the existing environment as a result of the development activities; and
- Environmental Effects: the consequences for the natural environment, including humans.

2.9 Thus, ‘impacts’ is the process or change in the environment and the ‘effect’ is the consequence of that change.

2.10 The EIA regulations require that an EIA assesses the likely significant effects arising from a proposal on population, human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage, landscape and interactions between these topics. The definition of significance is prescribed to varying degrees by statute and policy (including EU and national policies, guidelines and standards). In many cases, however, such guidance is general in nature. It is broadly accepted that the significance of an effect reflects the relationship between two factors:

- The value of the affected resource or receptor and its sensitivity to the impact (which can vary depending on the nature of the impact); and
- The magnitude of an impact (i.e. the actual change taking place to the environment).

Identification of Unmitigated Effects

2.11 The ES firstly identifies the likely significant environmental effects based on the final design prior to mitigation which needs to be delivered subsequent to the consent. Determination of significance is based on consideration of the characteristics of the impact, including the

likeliness, character (direct, indirect, secondary or cumulative); duration (frequency, short, medium and long term, permanent or temporary), and importance; the environmental sensitivity of receptors; and any quantified thresholds or indicative criteria set out in Government Regulations and Policy Guidelines. Where quantifiable criteria are not available or appropriate, defined qualitative criteria and expert judgement is applied.

2.12 The timescales considered are as follows:

- Short Term (i.e. less than 5 years);
- Medium Term (i.e. 5-10 years);
- Long Term (i.e. for the duration of the operational phase of the development);
- Permanent (i.e. irreversible); and
- Temporary (i.e. during the Construction Phase).

2.13 The significance of effects have been assessed using one or more of the following criteria, unless otherwise stated:

- International, national and local standards;
- Relationship with planning policy;
- Sensitivity of receiving environment;
- Reversibility and duration of effect;
- Magnitude of effect;
- Likelihood of effect and related uncertainties;
- Inter-relationship between effects; and
- The results of consultations.

Identification of Sensitive Receptors

2.14 The environmental effects of a given development are typically predicted in relation to sensitive receptors, including nearby residential developments and natural resources.

2.15 **Table 2.1** below sets out a standardised approach to considering the value and sensitivity of identified receptors and refers exclusively to environmental designations.

Table 2.1: Sensitivity of Receptors

VALUE	SENSITIVITY	CHARACTERISTICS
National	HIGH	Rare, resources and receptors of National Importance or recognition, limited potential for substitution, highly vulnerable to change, protected in national legislation. For example, Sites of Special Scientific Interest, National Parks, Grade I and Grade II* Listed Buildings and Scheduled Ancient Monuments.
Regional/ County/ District:	MODERATE	Resources and receptors are somewhat rare or vulnerable and difficult to substitute. Resources and receptors of Regional, County or District Importance e.g. Regional and Country Wildlife, Grade II Listed Buildings.
District/ Local	LOW	Locally important, difficult to substitute at a local level, rare or unusual at the local level but well represented elsewhere. For example, Local Nature Reserves, Locally Listed Buildings etc.

VALUE	SENSITIVITY	CHARACTERISTICS
Local	VERY LOW	Of limited importance or value, not vulnerable to change, can be readily substituted and/or which have been partially destroyed. For Example undesignated buildings of some limited historical significance.
Negligible	NEGLIGIBLE	Areas where there is minimal evidence of any resource or receptor.

Magnitude of Change

2.16 Impacts can arise as a result of development caused by direct actions and the proximity of new structures (e.g. noise or dust) or indirectly as a consequence of the Proposed Development. Indirect impacts are a matter of fact and judgement; an example of an indirect impact is substantial requirements off-site for aggregate materials. Impacts can be beneficial or adverse, temporary or permanent. The degree of impact has been considered in terms of Major, Moderate, Minor, or Negligible as set out in **Table 2.2**.

Table 2.2: Magnitude of Change

	MAGNITUDE	CHARACTERISTICS OF CHANGE
	Major Beneficial	The Proposed Development would remove features that adversely affect the existing environment, prevent further degradation, and enhance and protect the environment in the long-term.
	Moderate Beneficial	The Proposed Development would notably reduce rate of current degradation and/ or enhance existing character.
	Minor Beneficial	The Proposed Development would reduce rate of current degradation.
	Negligible	The Proposed Development would not result in any meaningful change to the receptor/ resource.
	Minor Adverse	The Proposed Development would increase the rate of current degradation or introduce some minor detractors into the environment.
	Moderate Adverse	The Proposed Development would result in the partial loss of a resource or notably degrade a receptor environment.
	Major Adverse	The Proposed Development would result in the complete loss of a resource or compromise the integrity of a receptor such that its long-term survival is highly unlikely.

Evaluation of Significance

2.17 Wherever applicable, topic-specific good practice methodologies, established impact prediction techniques, recognised models or guidelines are used to evaluate the significance of changes proposed. Where statutory criteria have not been available, non-statutory guidance or acknowledged reference points are adopted. The details of all methods and assessment criteria are provided in each ES technical chapter.

2.18 The primary objective of the assessment is to identify the likely significant environmental effects. A general approach to the determination of whether the impact is deemed to be significant is described below. Note, significance is not absolute, however, terms and assumptions are clearly set out so that the process is as transparent as possible.

2.19 Combining the value of each source, receptor and/or resource and the magnitude of the change (impact) resulting from the Proposed Development, an assessment has been made of the significance of the effect, as indicated in **Table 2.3**.

Table 2.3: Significance Matrix

MAGNITUDE OF CHANGE	BASELINE SENSITIVITY				
	VERY HIGH	HIGH	MODERATE	LOW	VERY LOW
MAJOR BENEFICIAL	Major Beneficial	Major-Moderate Beneficial	Moderate Beneficial	Moderate/ Minor Beneficial	Minor Beneficial
MODERATE BENEFICIAL	Major-Moderate Beneficial	Moderate Beneficial	Moderate-Minor Beneficial	Minor Beneficial	Minor/ Beneficial
MINOR BENEFICIAL	Moderate Beneficial	Moderate/ Minor Beneficial	Minor Beneficial	Minor/ Beneficial	Negligible
NEGLIGIBLE	Negligible	Negligible	Negligible	Negligible	Negligible
MINOR ADVERSE	Moderate Adverse	Moderate/ Minor Adverse	Minor Adverse	Minor/ Negligible Adverse	Negligible
MODERATE ADVERSE	Major-Moderate Adverse	Moderate Adverse	Moderate/ Minor Adverse	Minor Adverse	Minor/ Negligible Adverse
MAJOR ADVERSE	Major Adverse	Major-Moderate Adverse	Moderate Adverse	Moderate/ Minor Adverse	Minor Adverse

2.20 The above matrix has been used to assess the significance of environmental effects where they are predicted to occur, although specific assessment guidelines for certain topics use slightly different criteria. Where this is the case, the method for assessing significance will be outlined within the relevant topic chapter(s). The following terms are used in the ES unless otherwise stated to describe the significance of impacts:

- **Major beneficial or adverse significant impact** - where the development would cause a significant improvement (or deterioration) to the existing environment;
- **Moderate beneficial or adverse significant impact** - where the development would cause a noticeable improvement (or deterioration) to the existing environment;
- **Minor beneficial or adverse impact** - where the development would cause a small or barely perceptible improvement (or deterioration) to the existing environment; and
- **Negligible** - no discernible improvement or deterioration to the existing environment.

2.21 Where there is a possibility of two significant determinations (e.g. Moderate/Minor) either can be identified based on professional judgement and/or specifics of the assessment.

Mitigation

2.22 The ES identifies appropriate measures to avoid, prevent, reduce, or compensate for impacts, thereby providing mitigation of this impact (these are referred to as “mitigation measures”). Opportunities for enhancement are also taken advantage of, so as to maximise positive effects.

2.23 In general, ES mitigation can include:

- Measures which are part of the design, and thus for approval under this planning application. These are modifications to the location or design of the proposals at pre-consent stage. IEMA (2016) refers to these as “inherent” mitigation;
- Measures which need to be secured at a later stage, such as through a planning condition or planning obligation. These can be called “foreseeable” mitigation. Examples of these are provision of community infrastructure off-site, adherence to noise limits, or management through a plan which has not yet been produced (such as provision of a Construction Environmental Management Plan (CEMP), with details to be agreed by condition); and
- Measures which will be undertaken to meet other existing legislative requirements, or standard practice used to manage commonly occurring environmental effects. An example of these measures is adherence to emission control measures required under parallel consenting regimes, or standard considerate contractor practices to manage possible construction nuisance activities. These can be called “tertiary” mitigation.

2.24 This ES identifies the type of mitigation, considers certainty of the effectiveness, the mechanism for securing the mitigation, and timescales. This provides clarity on how the mitigation measures will be secured.

Evaluation of Residual Effects

2.25 Residual effects are the remaining impacts of the development assuming successful implementation of the identified mitigation measures. The significance of impacts is assessed and categorised as per the methodology; specifically:

- Major, moderate, minor or negligible;
- Positive (beneficial), negative (adverse);
- Short, medium or long term;
- Permanent or temporary;
- Reversible or irreversible;
- Direct or indirect; and
- Unavoidable or uncertain.

Monitoring

2.26 The need for monitoring of likely significant effects has been considered, and details of suggested monitoring activities have been recommended where relevant.

2.27 This has considered the type of indicators to be monitored and that the duration and character of the monitoring are proportionate to the nature, location and size of the Proposed Development, and the significance of its effects on the environment. Avoidance of duplication of monitoring has been considered, and any existing suitable monitoring arrangements identified.

2.28 The effectiveness of mitigation measures and the need for potential remedial action has been considered, based on the nature of the effect and the monitoring suggested.

2.29 The mitigation and monitoring measures are set out in each environmental topic chapter and summarised in the concluding tables to aid decision making and implementation.

Relationship to Parallel Consenting Regimes

2.30 EIA is undertaken to inform planning application decisions for particular projects, based on the requirements set out in the EIA Regulations. The test of consent for a planning application is whether the proposals are an acceptable use of land, in terms of relevant planning policy. There are wholly separate consenting regimes for the control of processes and emissions, such as the environmental permitting regulatory system.

EIA Screening and Scoping

2.31 Notwithstanding the procedural requirements for consultees to engage in stages of the EIA process, i.e. screening and scoping, involvement of the wider community, including residents, businesses and local interest groups have been engaged during the masterplanning/ design process, informing the evolution of the development parameters for this project. The development options have been considered and validated by the EIA process and the environmental considerations arising from the assessment process, which in turn has informed design choices made on the basis of minimising the project's negative environmental impacts and where possible, minimise the requirement for mitigation.

2.32 The EIA scoping process commenced in March 2021, by submitting a formal scoping request (**Appendix 2.1**) to UDC, and has been considered under the Council's reference UTT/21/1138/ SO. At the time of writing this ES, UDC have not responded to this request, notwithstanding the five-week period as prescribed by the EIA Regulations have since passed, without an agreed extension of time. On this basis, the scope of the EIA remains as submitted, whilst also taking into account those statutory consultee responses which have been received to the scoping request (i.e. Ecology is now scoped in). This provides us with an up to date view on the intended scope of the EIA, in the absence of the Council's formal Scoping Opinion.

2.33 This process identified the following topics to be considered in the EIA:

- Agriculture;
- Air Quality;
- Ecology;
- Flood Risk and Drainage;
- Landscape and Visual;
- Noise;
- Socio-Economics and Health; and
- Transport.

2.34 In order to inform their Scoping Opinion, UDC consulted the following:

- ECC Highways;
- Saffron Walden Town Council & Sewards End Parish Council;
- UDC – New Communities Senior Planning Officer;
- Place Services – Ecology;
- Health and Safety Executive;
- Exolum Pipeline Systems Ltd;

- Historic Environment (Archaeology) – Place Services at ECC;
- London Stansted Airport;
- Natural England;
- ECC Development and Flood Risk Team;
- NATS Safeguarding;
- Essex Police;
- ECC – Minerals and Waste;
- UKPN;
- Defence Infrastructure Organisation;
- Environment Agency; and
- Cadent Gas.

Scope of Environmental Topics

2.35 It should be noted that the other environmental topics required to be considered in the EIA Regulations were determined not likely to have significant environmental effects. A summary of the topics scoped out is provided in **Table 2.4** below:

Table 2.4: Non-significant Environmental Topics

TOPIC	CONSIDERATION
Microclimate	**Odour** With the implementation of a waste strategy for the operational phase of the Proposed Development, significant odour effects are not anticipated. **Lighting** The Proposed Development will require external lighting on roads and paths. Given the outline nature of the Proposed Development, potential lighting impacts will be considered in general terms as part of the LVIA, however, not deemed to be significant. It is anticipated that an appropriate lighting scheme will be required and implemented in response to an appropriately worded planning condition, to provide sufficient safeguards and controls by the LPA to consider this at the detailed design (reserved matters) stage.
Climate Change	Potential climate implications from the Proposed Development are two separate but interrelated issues: 1) Climate Change Adaptation (how the project has been designed to be resilient to a changing climate); and 2) Climate Change Mitigation (how the project may contribute to climate change through the emission of greenhouse gases (GHGs) and how it seeks to mitigate such emissions). The above issues will be considered insofar as they relate to the various topics scoped into the EIA and, therefore, the requirement for a standalone assessment of Climate Change has been scoped out of the EIA.

TOPIC	CONSIDERATION
Health and Wellbeing	The construction of the Proposed Development may result in increased noise, dust and vehicle emissions which can have impacts on human health. Once the Proposed Development is operational and occupied, the main impacts on human health are likely to be from increased traffic. Increased traffic can affect pedestrian amenity and safety as well as lead to increased air pollution and noise, with consequent effects on health and quality of life. There will, however, be some positive health impacts resulting from the creation of more formalised open space throughout the Proposed Development and links to sustainable movement e.g. maintained and adequately lit footpaths encouraging movement and activity. A Human Health and Wellbeing Assessment (adhering to the Rapid Health Impact Assessment guidance published by the Healthy Urban Development Unit (HUDU) has been prepared in support of the Proposed Development. The Health Impact Assessment (HIA) is appended to the ES in **Appendix 12.1**.
Tourism and Retail	There are unlikely to be any tourism and retail effects as a result of the Proposed Development, therefore, tourism and retail has been scoped out of the EIA.
Arboriculture	Arboricultural features on-site include scattered mature and semi-mature trees and hedgerows on the Site boundary, several of which are considered to support sufficient species to potentially qualify as important under the Hedgerow Regulations 1997. However, the majority of the hedgerows and trees will be retained as part of the Proposed Development. Some of the hedgerow will also be replaced and enhanced with new native planting. With this mitigation in place, significant impacts on arboricultural features are not considered likely, therefore, arboriculture has been scoped out of the EIA.
Built Heritage	There are no heritage assets located on-site, therefore, direct impacts on heritage assets as a result of the Proposed Development are not anticipated. The closest heritage asset to the Site is Pounce Hall, a Grade II Listed Building which is approximately 200m east of the Site. Indirect impacts on this heritage asset, and other heritage assets in close proximity to the Site through changes to their setting are not considered likely. Significant impacts on heritage are not considered likely, therefore, heritage has been scoped out of the EIA.
Archaeology	A Geophysical Survey of the Site was undertaken in January 2021 which identified a single feature in the eastern extent of the Site which was assessed as having moderate archaeological potential. No other potential archaeological remains were identified within the Proposed Development area. Further archaeological work including trial trenching may be required in the eastern extent of the Site. If this is required, this can be secured by a suitably worded planning condition. Impacts on archaeology are not considered to be significant and, therefore, Archaeology has been scoped out of the EIA.

TOPIC	CONSIDERATION
Ground Conditions (including contamination, stability and hydrogeology)	The Site is currently in use as agricultural land, therefore, sources of contamination are likely to be limited to use of agricultural fertilisers and pesticides. These are unlikely to pose a significant risk to human health, the environment, controlled waters or buildings/ services. For these reasons, ground conditions have been scoped out of the EIA.
Utilities	Provision of utilities (electricity, gas, fresh/drinking water and foul water) will be addressed through appropriate technical reports, as needed, but are not considered a likely significant environmental effect. In addition to this, utility providers have a statutory duty to provide capacity in line with permitted demand. For these reasons, utilities have been scoped out of the EIA.
Waste	A Site Waste Management Plan (SWMP) and a waste and recycling strategy will be developed for the operational phase at the detailed design stage. This will ensure that waste is dealt with appropriately and recycled where possible during operation, ensuring that any wider impacts are sufficiently mitigated. For the construction phase, preparation of a CEMP, in response to appropriately worded planning condition will cover the management of construction waste. It is considered that impacts arising from waste are not likely to be significant and, therefore, waste is scoped out of the EIA.
Major Accidents or Disasters	Regulation 4 (4) of the EIA Regulations requires the identification, description and assessment of expected significant effects arising from the vulnerability of the Proposed Development to relevant major accidents or disasters. Given the Site and the nature of the Proposed Development, there will be inherent risks of accidents and impacts from disasters, but these are considered unlikely to be major and significant effects are unlikely. Therefore, this aspect has been scoped out of the EIA. Part of the Site projects into the HSE inner, middle and outer zones associated with a Major Hazard Site (H4045 CLH Pipeline Systems Ltd). The HSE has been consulted on the Proposed Development and has not advised against it, provided there was only “low sensitivity development” (e.g. landscaping, SuDS ponds and roads) within the inner zone. The illustrative masterplan and accompanying parameter plans have been prepared on this basis.

ES Content and Requirements of the EIA Regulations

2.36 The EIA Regulations establish required processes for EIA screening and EIA scoping, as described in the previous sections. The Regulations also set out a series of requirements for EIA generally (primarily in Regulation 4) and for the ES document (primarily in Regulation 18 and Schedule 4). For clarity, this ES section (**Table 2.5**) describes the approach to key elements.

Table 2.5: ES Content Requirements

SCHEDULE 4 REQUIREMENT	WHERE IT IS LOCATED IN THIS ES
1. A description of the development, including, in particular, a description of the location of the development, the physical characteristics of the whole development, the main characteristics of the operational phase of the development and an estimate, by type and quantity, of expected residues and emissions.	Chapter 4: Proposed Development.

SCHEDULE 4 REQUIREMENT	WHERE IT IS LOCATED IN THIS ES
2. A description of the reasonable alternatives studied by the developer and an indication of the main reasons for selecting the chosen option.	Chapter 4: Proposed Development and Alternatives.
3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	The baseline scenarios are defined within each topic chapter, including consideration of the baseline evolution without the Proposed Development.
4. A description of the factors specified in regulation 4(2) likely to be significantly affected by the development.	Descriptions provided in each topic chapter. Scoping details are in Chapter 2 (this chapter).
5. A description of the likely significant effects of the development on the environment resulting from, inter alia: (a) the construction and existence of the development, including, where relevant, demolition works.	Chapter 4: Proposed Development and topic chapters 6 -13.
(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources.	Chapter 4: Proposed Development and topic chapters 6-13.
(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste.	Chapter 4: Proposed Development and topic chapters 6-13.
(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters).	Risks due to accidents or disasters as a result of the Proposed Development are not considered likely.
(e) the cumulation of effects with other existing and/ or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.	Cumulative effects are considered in Chapter 14: Cumulative Effects.
(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change	Impacts to climate change are assessed in Chapter 9: Flood Risk and Drainage.
(g) the technologies and the substances used.	Chapter 4: Proposed Development.
6. A description of the forecasting methods or evidence used to identify and assess the significant effects on the environment.	A framework approach to methods is provided in Chapter 2 (this chapter) with refinements in the topic chapters as necessary.

SCHEDULE 4 REQUIREMENT	WHERE IT IS LOCATED IN THIS ES
7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements.	Each topic chapter specifies mitigation measures and monitoring. This is summarised in Chapter 1.
A non-technical summary of the information provided.	Provided as a standalone document, Volume 3.
A reference list detailing the sources used for the descriptions and assessments included in the Environmental Statement.	References are provided at the end of each ES chapter.

Relevant Environmental Assessments

2.37 Regulation 18 (3) (c) requires that any relevant UK environmental assessments reasonably available are taken into account, so as to avoid duplication of assessment. Through the consultation process and cumulative impact consideration, no specific relevant assessments have been identified. Notwithstanding this, in the case of transport, due to the current COVID-19 pandemic limitations on the ability to conduct primary traffic surveys, with the agreement of the Highway Authority, the traffic data of other recent committed schemes within the locality have been utilised to inform the Transport Assessment.

Consultation

Pre-Application Consultation

2.38 The design team have met (virtually) with key stakeholders including representatives from UDC and ECC to consult Officers on the emerging proposals and the key issues associated with them. A number of items were discussed including the Principle of Development, Landscape and Highways.

Principle of Development

2.39 Officers discussed the relevance of Policy S7 in relation to the principle of development. Local appeals show that the weight to be attributed to Policy S7 is determined by the degree of housing land supply shortfall and, therefore, moderate weight has been given to Policy S7. UDC Officers noted they would wish to ensure that the Application Site could be developed without stopping any potential wider urban extension to the south east/east of Saffron Walden that may come forward in the future through providing a corridor from Radwinter Road to the Site's southern boundary, and that highway and air quality aspects would need to be addressed in particular.

Landscape

2.40 Officers commented on the proximity of the Site to Sewards End, and potential for coalescence, resulting in the need to ensure a clear buffer between Saffron Walden and Sewards End. The design team explained that through the evolution of the design, proposals have been tested in three dimensions to understand how development would actually be experienced from Sewards End as well as other locations, and the general conclusion is that the proposals would not undermine the separate identity of either Sewards End or Saffron Walden.

Highways

2.41 The matter of reserving a corridor for a future relief road in the western extent of the Site were discussed. This corridor would provide sufficient land available for future road widening

should a relief road be required and also safeguarded the opportunity to change the access arrangements to Radwinter Road from a priority junction to a roundabout should it be necessary. The approach would provide sufficient infrastructure to serve the anticipated number of dwellings for the Proposed Development but not prejudice the opportunity for a potential urban extension to the south of Saffron Walden should it come forward in the future.

2.42 Officers from ECC were concerned about the road going through the residential development of the Site and options for an eastern alignment/bypass were discussed. Officers requested that work should be undertaken to compare the option for a relief road being routed through the Site against an eastern bypass alignment. This outcome of this analysis is detailed further in Chapter 4 - Alternatives.

EIA Scoping

2.43 In addition to public consultation and the pre-application engagement with the Local Planning Authority (LPA), the EIA Regulations contain a formal process for determining the content of an EIA called “scoping”. Using EIA Scoping, the LPA was asked to provide baseline information and to provide their view as to the potential significant environmental effects resulting from the Proposed Development, resulting in an agreed scope of works for the EIA. The LPA sent the EIA Scoping Request to relevant organisations (referred to as “consultees”) who they determine would provide necessary responses.

2.44 While there is an overlap between EIA scoping, pre-application consultation and the public consultation, EIA scoping provides a formal check on the proposed scope of the EIA and content of the ES. Under Regulation 18(4), an ES must be based on the most recent scoping opinion issued (so far as the Proposed Development remains materially the same as the Proposed Development which was subject to that opinion or direction). At the time of writing, no formal Scoping Opinion has been received, however, this EIA has been formulated on the basis of the submitted scoping report, ongoing dialogue by the project team with statutory consultees and also reference to the consultee responses received and accessible in the public domain, via the Council’s website, to the Applicant’s scoping request. Collectively, this provides the Applicant with a comprehensive view on the scope of the volunteered EIA/ES for this project, in the absence of the Council’s formal Scoping Opinion, which is yet to be received.

2.45 **Table 2.6** provides a summary of the key matters highlighted during the consultation with consultees, and the project team response, specifically confirming how the issues have been dealt with within the ES.

Table 2.6: Summary of Key Consultee Issues and Responses

CONSULTEE	COMMENTS	DESIGN ASSESSMENT RESPONSE TO ISSUES RAISED (WHERE APPROPRIATE)
ECC Highways	Essex County Council Highways agrees that transport should be scoped into the EIA and a Transport Assessment and Travel Plan should be provided in support of the application. The status of application ref: UTT/17/3413 should be sought with the Council as this includes 55 residential dwellings and may need to be included within the Cumulative Assessment.	Chapter 13: Transport. Chapter 14: Cumulative Assessment.

CONSULTEE	COMMENTS	DESIGN ASSESSMENT RESPONSE TO ISSUES RAISED (WHERE APPROPRIATE)
Saffron Walden Town Council & Sewards End Parish Council	The Proposed Development is considered to be unacceptable development and there are concerns on the following: • Loss of agricultural land; • Reducing the gap between Saffron Walden and Sewards End; • Visual impacts due to the Site being elevated above the existing town; • Cumulative effects with adjacent sites including Linden Homes; • Increased use of private cars within the town which may impact the Air Quality Management Area (AQMA) and cause congestion on public transport services; • Impacts on the adjacent Conservation Area; • Presents a risk of major accident/risk to human health due to proximity to the international fuel store; and • Loss of biodiversity and habitat.	Chapter 6: Agriculture. Chapter 10: Landscape and Visual. Chapter 7: Air Quality. Chapter 8: Ecology. Chapter 14: Cumulative Impacts.
UDC – New Communities Senior Planning Officer	The comments note the importance to assess cumulative impacts within the EIA. The approach to assessing cumulative effects detailed in the Scoping Report is welcomed. In addition, it will be important to monitor the status of other sites in the surrounding area. The Strategic Housing Land Availability Assessment (SHLAA) will be one source of information to support this monitoring. The evidence being prepared for the new Local Plan (which will be adopted in 2024) has the potential to alter understanding of baseline conditions as well as the likely effects of development on the environment. It is therefore considered essential that the available evidence is monitored throughout preparation of the ES. The above will be relevant to a range of scoped-in topics, including but not necessarily limited to: 1. Transport 2. Air Quality 3. Landscape and Visual Effects 4. Social Infrastructure, e.g Education	Chapter 7: Air Quality. Chapter 10: Landscape and Visual. Chapter 12: Socio-Economics. Chapter 13: Transport. Chapter 14: Cumulative Impacts.

CONSULTEE	COMMENTS	DESIGN ASSESSMENT RESPONSE TO ISSUES RAISED (WHERE APPROPRIATE)
Place Services – Ecology	Request that Ecology is scoped into the EIA, on the basis that the mitigation and case presented at this stage to scope out ecology, does not out-rule likely significant effects on European Protected Species, including Great Crested Newts, Bats and Hazel Dormice.	Chapter 8: Ecology.
Health and Safety Executive	The Proposed Development is located within HSE's land-use-planning zones for CLH Pipeline Systems Ltd.	Considered as part of the evolution of the Masterplan design. Chapter 2: Methodology & Approach.
Exolum Pipeline Systems Ltd	The Proposed Development will be constructed within close proximity to Exolum apparatus. Such works would require consent from Exolum.	Considered as part of the evolution of the Masterplan design, does not require specific consideration within the EIA.
Historic Environment Consultant – Place Services at ECC (Archaeology)	There are potential archaeological features identified within the Proposed Development area, however, due to these features being limited, a programme of trial trenching undertaken post outline consent is welcomed and archaeology can be scoped out of the EIA.	N/A.
London Stansted Airport	No objection, however, a Crane Advisory Permit is required.	N/A.
Natural England	The proposal will not affect any national designated geological or ecological sites or landscapes and, therefore, no additional comments from Natural England are provided. General advice related to EIA Scoping is provided.	Chapter 8: Ecology.
ECC Development and Flood Risk Team	All information associated with surface water drainage should be provided with the planning application.	Chapter 9: Flood Risk and Drainage.
NATS Safeguarding	No objection.	N/A.
Essex Police	Scoping Stage is too early to make comment, however, Essex Police wish to be consulted as scheme develops.	N/A.

CONSULTEE	COMMENTS	DESIGN ASSESSMENT RESPONSE TO ISSUES RAISED (WHERE APPROPRIATE)
ECC – Minerals and Waste	A significant proportion of the project area lies within a Mineral Safeguarding Area (MSA) for chalk, with this total Site area within the MSA being 13ha, which exceeds the 3ha threshold for this mineral. A Mineral Resource Assessment (MRA) has been submitted in support of the planning application which demonstrates that no unacceptable impacts would arise in this regard.	Further consideration to this aspect will be outside of the EIA process.
UKPN	Should excavation works affect the Extra High Voltage equipment (6.6KV, 22KV, 33KV or 132KV), UKPN will need to be consulted.	N/A.
Defence Infrastructure Organisation	Records indicate there may be a redundant pipeline in the area. If construction works are in close proximity to the pipeline, a specialist pipeline contractor is recommended. The pipeline has been declared redundant by the Ministry of Defence and the necessary legal charges have been removed in accordance with the Land Powers (Defence) Act 1958 and subsequent legislation. If the landowner wishes to remove the pipeline from the land, they may do so at their own cost.	Considered as part of the evolution of the Masterplan design, does not require specific consideration within the EIA.
Environment Agency	The Environment Agency are satisfied that all matters within their remit have been taken into consideration.	N/A.
Cadent Gas	Cadent Gas have no objection.	N/A.

Baseline Assessments

2.46 The baseline environmental conditions need to be established to enable an accurate assessment of potential changes to such conditions that may occur, and to assess the resultant environmental impacts of the Proposed Development.

2.47 The EIA determines the likely significant environmental effects resulting from the Proposed Development for the following scenarios:

Baseline (Current Site Conditions)

- The baseline assessment year for the EIA is the environmental conditions of the Site as recorded in surveys and site inspections undertaken in 2020/2021 (or existing assessments in the case of Transport). The baseline position consists of an agricultural field.
- A broad range of information has been gathered to define and describe the existing environmental characteristics and receptors for each environmental topic baseline. Specific relevant baseline details are provided in the topic chapters.

Baseline with the addition of the Proposed Development

- Baseline with the Proposed Development under construction, and

- Baseline with the Proposed Development in operation.

Baseline Evolution without the Proposed Development:

- The EIA Regulations require an assessment of *"an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed. With reasonable effort on the basis of the availability of environmental information and scientific knowledge"* (Schedule 4, 3). The project baseline without the Proposed Development is considered to be the continuation of the current Site's uses. Topic-specific baseline evolution assessments are provided in the individual topic chapters.

Spatial Scope

2.48 The geographical extent of the EIA is referred to as the 'spatial scope' and varies depending on the given environmental receptor. Some environmental effects also extend beyond the Site boundary, such as air quality and noise effects. The appropriate spatial scope of specific assessments is set out in the relevant ES chapters and differs based on the requirements of each assessment. This takes into account:

- The physical area of the Proposed Development and any ancillary works;
- The nature of the baseline environment; and
- The manner in which effects are likely to spread.

2.49 Key environmental receptors within and around the Site are presented in Chapter 3 of this ES. Where specific or more distant receptors have been considered, these are described in relevant topic chapters.

Temporal Scope

2.50 The EIA considers the effects from the Site preparation and construction through to operation. The temporal scope used for the assessment assumes the construction works for the Proposed Development will commence in 2023.

2.51 The temporal scope also takes the time of day during which construction works are likely to be undertaken into account.

2.52 The Proposed Development is anticipated to be completed approximately seven years following commencement. The principle assessment year for EIA, or year of completion, will therefore be 2030.

Cumulative Impacts

2.53 Cumulative effects can be broadly defined as the effects which results from incremental effects of an action when added to other past, present and reasonably foreseeable future actions. These actions should be considered regardless of what agency or person undertakes such actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

2.54 Chapter 14 of the ES details the consideration of cumulative impacts which has been undertaken and draws together the findings from each topic chapter to analyse the interactions between effects and to provide a summary of the cumulative effects of the Proposed Development.

Assumptions and Limitations

2.55 The following are the overarching assumptions, limitations and uncertainties in the ES.

Assumptions on a topic specific level are covered in each chapter.

- The assumptions undertaken within each of the topic chapters are based on the plans enclosed at **Appendix 4.1**;
- All of the principal existing land uses adjoining the Site remain substantially unaltered;
- Information provided by third parties is complete and up to date;
- The design, construction and operational development will satisfy environmental standards consistent with contemporary legislation, practice and knowledge at the time of the submission of the application as a minimum, but will strive to achieve best practice;
- Baseline conditions have been established from a variety of sources, including historical data, however, due to the dynamic nature of certain aspects of the environment, conditions may change during the construction and operation of the Proposed Development.
- The planning permission, if granted, will contain conditions and legal obligations that will be sufficient to secure the necessary mitigation measures identified during the assessment process.

2.56 The individual topic chapters provide additional detail where there are specific assumptions and limitations to a particular topic chapter.

2.57 It is not considered that these have had a material impact on the outcome or conclusions of the assessments undertaken, which remain an accurate, comprehensive and robust record of the likely significant effects arising from the Proposed Development.

Avoidance of Bias

2.58 This ES reports the findings of an independent assessment of environmental effects, which presents the environment effects objectively from any planning argument for the Proposed Development.

2.59 Where qualitative assessment has been undertaken, it has used standardised methodology and employed professional judgement. The assessment has taken a conservative 'worst case view' in assessing impacts where appropriate. Where uncertainties or assumptions have been made in the assessment process, these have been clearly stated.

Approach to Technical Chapters

2.60 Each topic chapter (chapters 6-13 inclusively) has approached the assessment by following a consistent structure, which is generally as follows:

- **Introduction** - A brief summary of the topic to be assessed;
- **Potential Impacts** - Building on the scoping stage; this section outlines potential impacts on a particular topic;
- **Methodology** - Outlines the methods used to undertake the assessment for a particular environmental topic;
- **Baseline Conditions** - Outlines the baselines for the topic area under assessment. The environmental effects are measured by the degree of deviation from the baseline;
- **Predicted Impacts** - Identifies the nature, extent and magnitude resulting from the development during construction and once operational;
- **Significance Evaluation of Predicted Impacts** - The significance of the predicted impacts is assessed according to the methodology;

- **Mitigation and Enhancement** - Details the scope for mitigation of any adverse effects, enhancement of beneficial effects, and the effectiveness of these measures;
- **Residual Impacts** - Evaluate the significance of any unavoidable or residual impacts that remain after the mitigation and enhancement measures have been fully implemented;
- **Monitoring** - Considers the need for monitoring any effects and mitigation to confirm that effects and mitigation are operating as expected in the EIA;
- **Cumulative Impacts** - A summary of cumulative impacts provided for clarity; and
- **Conclusion and Summary of Impacts** - A conclusion and a summary of impacts in table format is provided in each chapter.

Conclusion

2.61 The next chapter outlines the Site context, whilst also identifying the existing Site conditions, land use and nature of the Site and its surroundings.

Site and Context

3

3.0 Site and Context

Introduction

3.1 This chapter of the ES seeks to set the context for the assessment of the likely significant environmental effects arising from the Proposed Development. It describes the nature of the Site and the surrounding area and the specific planning context, insofar as it relates to the Site and its immediate surroundings.

Site Location and Description

3.2 The Site is 18.3 hectares (ha) in size and is located immediately to the east of Saffron Walden, within the administrative boundaries of UDC. It is located approximately 1.5km from the town centre of Saffron Walden.

Figure 3.1: Site Location

3.3 The Site is bound to the west by a consolidated area of residential development approved under UTT/13/3467/OP and UTT/16/1856/DFO, which is now being implemented by Linden Homes and now forms the eastern built edge of Saffron Walden. To the south-west is land at Shire Hall Farm, which is subject to an outline planning permission for up to 100 dwellings, granted under local planning authority reference: 17/2832/OP. Arable agricultural land bounds the Site to the south and east, and the B1053 Radwinter Road runs along its northern boundary, with the Saffron Walden fuel depot beyond.

3.4 The land on-site is classified as 22% Grade 2 and 76% Grade 3a Agricultural Land under the Ministry of Agriculture, Fisheries and Food Agricultural Land Classification of England and Wales.

Highways and Public Rights of Way

3.5 There are no Public Rights of Way (PRoW) across the Site. PRoW within close proximity of the Site include:

- Footpath 315_21 which runs along the northern edge of Radwinter Road approximately 30m to the north of the Site;
- Footpath 315_22 approximately 100m north of the Site and which joins up with Footpath 315_21;
- Byway 44_18 approximately 430m to the south of the Site; and
- Bridleway 44_19 approximately 550m to the south-west of the Site.

Archaeological and Heritage Features

3.6 There are no Scheduled Monuments on-site. The closest Scheduled Monuments to the Site are Tiptoft's Moated Site and Fishponds Scheduled Monument approximately 1.1km south east and the Maze Scheduled Monument is approximately 1.2km north west of the Site.

3.7 There are no Listed Buildings on the Site. The closest to the Site is Springfield Grade II Listed Building which is approximately 200m east of the Site. The Saffron Walden Conservation Area is approximately 750m to the west of the Site.

3.8 With regard to Registered Parks and Gardens, The Maze Grade II Registered Garden is approximately 1.2km north west of the Site, Bridge End Gardens, a Grade II* Registered Garden is approximately 1.9km north west and Audley End Grade 1 Listed Park and Garden is approximately 2.1km west of the Site.

Flood Risk and Drainage

3.9 A minor watercourse flows west through the northern section of the Site alongside the existing track.

3.10 The closest section of Environment Agency designated Main River (eastern arm of The Slade) is located 567m west of the Site. The Slade flows west through Saffron Walden to its confluence with the River Cam approximately 3.2km west of the Site.

3.11 The Site is located within Flood Zone 1, as shown on the Environment Agency Flood Map for Planning. This is the area shown to be at low risk of river flooding with less than 1 in 1,000 annual probability of river flooding (<0.1%).

3.12 The Environment Agency Long Term Flood Risk Map indicates that the Site is predominantly at very low risk of surface water flooding. Some areas of potential low risk are shown within the north of the Site, considered to be associated with the minor watercourse present. The mapping also indicates reservoir flooding presents no risk to the Site.

Geology, Hydrogeology and Soils

3.13 Geological data held by the British Geological Survey (BGS) shows that the bedrock geology underlying the Site is Chalk. Superficial deposits of Lowestoft Formation Diamicton are present within the south east of the Site. Soilscapes mapping indicates the underlying soil as freely

draining lime-rich loamy soils.

Environmental Designations and Ecological Features

3.14 The Site comprises an arable field, dominated by bare ground with areas of tall ruderal habitat in the field margin. The field boundaries of the Site are dominated by species rich hedgerows with scattered and mature trees.

3.15 There are no international sites designated for conservation on the Site or within 10km of the Site. Additionally, there are no nationally designated sites within 2km of the Site. The closest non-designated site for nature conservation is the Pounce Wood Local Wildlife Site (LWS) which is approximately 180m north of the Site. Pounce Wood and Martins Wood Ancient Woodland are approximately 150m north and 600m north east of the Site respectively.

Air Quality and Pollution

3.16 The Site is not located within an AQMA however, UDC have declared an AQMA for exceedances in annual mean nitrogen dioxide (NO_2) in the town centre of Saffron Walden. The boundary of the AQMA is approximately 800m west of the Site.

Conclusion

3.17 The next chapter describes the Proposed Development and outlines the main alternatives considered by the Applicant and an indication of the principal reasons for the chosen scheme.

Proposed Development Including Alternatives

4

4.0 Proposed Development including Alternatives

Introduction

4.1 This chapter describes the Proposed Development which forms the basis of the EIA. It describes the various elements of the proposals, as well as the means by which the proposals would be implemented.

Planning Drawings

4.2 Planning drawings relied on and which form the basis of the EIA are appended to the ES in **Appendix 4.1**.

4.3 The planning application is made in outline with all matters reserved with the exception of access. Therefore, to inform the EIA, a series of Parameter Plans have been prepared covering Land Use, Building Heights, Access and Movement and Green Infrastructure.

4.4 Together, these Parameter Plans define:

- The location for the principal areas of built development within the overall Site boundary;
- The height of the Proposed Development;
- The overall extent of land which may be used for open space, landscaping, surface water storage and other 'Green Infrastructure'; and
- The principal routes of movement for vehicular and non-vehicular traffic.

Development Overview

4.5 The application will be submitted in outline, with all matters reserved for future approval, with the exception of access.

4.6 The full description of development is:

Outline planning application for the erection of up to 233 residential dwellings including affordable housing, with public open space, landscaping and sustainable drainage system (SuDS) with vehicular access point from Radwinter Road. All matters reserved except for means of access.

Design Evolution

4.7 Twelve design principles have been formulated in order to evolve the most appropriate design strategy for the Site. A summary of these are provided below:

1) Reflect local landscape character by creating similar field patterns marked by narrow woodland shaws for development to nestle into;
2) Woodland blocks on or around ridgelines will be included to provide screening;
3) Open ground on higher land to the south east will be created to protect views to the town and countryside/view corridors towards local landmarks such as St Mary's Church;
4) SuDS features will be included to mark the entrance of the Site at its lowest point with potential reference to historical local landscape features, such as moats;

5) The relationship between movement corridors and landform will be maintained as well as development edges and landform;

6) The eastern parcel of the Site will be well integrated into the landscape to provide a sensitive transition to rural areas;

7) Tertiary streets will reflect character and create a place for people first;

8) The built form will reflect local vernacular;

9) Green and blue infrastructure will reinforce/enhance biodiversity and habitat creation;

10) Amenity value and use of spaces will be included within green and blue infrastructure networks;

11) Urban grain and density will reflect local context and character with particular care taken to sensitive edges such as the eastern edge; and

12) An extensive network of pedestrian/ cycle connection will be included to maximise permeability, connectivity and opportunities for active travel rather than vehicular use.

4.8 Following consultation with UDC and ECC, the design principles have evolved to create the following Masterplan, as shown in **Figure 4.1**.

Components of Proposed Development

Use and Amount

4.9 Outline planning consent is sought for up to 233 residential dwellings. The Land Use Parameter Plan (**Appendix 4.1**) shows that the proposed green and open space across the Site will provide a number of functions and activities, including play and recreational activity. The majority of existing hedgerows and trees will be retained, thereby maintaining connectivity to preserve and enhance ecological habitats.

Density

4.10 The Proposed Development seeks to make efficient, effective use of the land and offers a design which has been influenced by its location and the character of the surrounding context, comprising of up to 233 dwellings which equates to an average residential density of circa 35 dwellings per net developable hectare.

4.11 The specific mix of dwellings will be agreed through future reserved matters applications. The Proposed Development will provide a range of unit types in terms of size, ranging from 1/2 bedroom flats, 2-bedroom units and up to 4 bedroom homes. An indicative housing mix is provided in **Table 4.1.**

Table 4.1: Indicative Housing Mix

HOUSE TYPE AND NUMBER OF BEDS	APPROXIMATE NUMBER
1 bed flat	31
2 bed flat	30
2 bed house	73
3 bed house	78
4 bed house	21

Figure 4.1: Illustrative Masterplan

Landscape

4.13 The landscape strategy for the Site, as informed by the design principles mentioned above, has been driven by the Site's existing key views in and out of the Site and to enhance connections into the wider existing community. A network of multi-functional Green Infrastructure will protect and enhance existing hedgerows and trees, provide new biodiverse habitats, incorporate sustainable drainage attenuation and provide areas for play and recreation.

Health and Wellbeing

4.14 The landscape strategy focuses on the health and wellbeing of future residents and future users of the key spaces of the Site.

Social and Play.

4.15 A number of social civic opportunities have been created within the design for the key spaces that provide the means for community events or small pop-up social events. In addition, two formal play spaces (LEAPS) are proposed.

Recreation

4.16 The proposed Green Infrastructure will provide a connected movement network for pedestrians and cyclists linking the Proposed Development to Saffron Walden and existing PRoWs through the outlying countryside. The network will also link key spaces within the Site, providing convenient access to a variety of functions and activities and a circular loop around the Proposed Development.

Green Infrastructure Network

4.17 The collective vision for the Masterplan is to establish a sustainable landscape through a strong Green Infrastructure network which sensitively integrates and enhances the existing Green Infrastructure and promotes the creation of new green infrastructure into the design.

4.18 A series of linked key spaces will be formed on the Site as a network. These spaces include:

High Land Park

4.19 High Land Park will be a multifunctional space on higher land at the south east of the Site with expansive views to Saffron Walden. The space proposes to incorporate meadowland, a viewing area with seating and native planting/woodland blocks.

Green Corridors

4.20 The Green Corridors are internal linear open spaces that follow the landform falling from the High Land Park to the south/east to the wetland area to the north of the Site. The Green Corridors will contain a mixture of functional open space areas as well as semi-natural areas.

Church Corridor

4.21 The Church Corridor is a green street and view corridor that frames the view from the Site to St Mary's Church. The Corridor connects the High Land Park to the Western Neighbourhood Green.

4.22 A wide verge with tree planting, pedestrian and cycle connections are accommodated within the Church Corridor.

Wetland Edge

4.23 The wetland edge will front directly onto a large naturalistic space to the north of the Site. This combines swathes of meadow, native planting, existing hedgerows and wetlands to create an ecologically diverse space.

Rural Edge

4.24 The Rural Edge will wrap around the north east and south east of the Site and will incorporate a variety of landscape types including existing densely wooded edges.

Drainage Strategy

4.25 The proposed Drainage Strategy for the Site is an integral part of the Green Infrastructure design and aims to work with the existing topographical features and control surface water runoff from the Proposed Development through the use of SuDS, such as open channel swales and basins.

Open Space

4.26 As shown on the Landscaping and Green Infrastructure Parameter Plan (**Appendix 4.1**), the Proposed Development will create a total of 10.09ha of green space as shown in **Table 4.2**.

Table 4.2: Open Space Provision

OPEN SPACE CATEGORY	SITE PROVISION (HA)
Parks and Gardens *	0.59
Natural/ Semi Natural Green Space	1.66
Amenity Green Space	1.02
Hybrid Green Space**	6.82
Total	**10.09**

**Including provision for Children and Young People*

*** Natural/semi Natural Amenity*

Access

4.27 As shown on the Access and Movement Parameter Plan (**Appendix 4.1**), provision of a hierarchy of new primary, secondary, tertiary, pedestrian and cycle routes are proposed, allowing users of the Site to move safely between different parts of the Site as well as to the adjacent countryside, services and facilities of Saffron Walden.

4.28 Primary vehicular access will be provided from a new access on Radwinter Road. The alignment of the Primary Route and the space made available for its junction arrangements are such that the route and its junction could, if required, be made available in future and subject to further works, to accommodate a future relief road to development to the south (more detail on this is provided in the assessment of alternatives, later in this chapter).

4.29 The public transport strategy for the Proposed Development includes provision for bus stops on Radwinter Road. The primary route has been designed to accommodate bus movements and allows the potential for bus services to enter the Site, if required in the future.

Alternatives

4.30 Schedule 4 of the EIA Regulations requires that an ES should provide a description of reasonable alternatives considered by the Applicant which are relevant to the project and its specific characteristics, and an indication of the main reasons for the chosen option including a comparison of environmental effects. This is provided below.

Site Alternatives

4.31 No alternative sites were considered by the Applicant. The Applicant has other landholdings in the area, however, these sites were not considered suitable for development as these are not well related to existing settlements and are not sustainably located.

4.32 The Site selected is adjacent to the existing built up area of Saffron Walden, which is a well served Town, and considered a sustainable location for further development.

4.33 The 'No Development' alternative, or evolution of the Site without the Proposed Development is considered in each topic chapter, embedded within establishing the existing baseline environmental conditions, as required under the 2017 EIA Regulations (Schedule 4,3).

Design Alternatives – Relief Road Alignment

4.34 During consultation with UDC and ECC in March 2021, discussions were undertaken to assess the potential for the future alignment of a relief road through the Site. Two different options for the relief road have been tested by the design team: a relief road in the western extent of the Site or in the eastern extent of the Site. The capacity of each alignment to accommodate new traffic would be the same, as confirmed in the Transport Assessment (**Appendix 13.1**).

4.35 Following detailed technical analysis, the western alignment has been selected. In addition to highways reasons, there are a variety of non-transport related reasons why the western option is considered to be more appropriate, including landscaping and visual impact, utilities and arboriculture. This is detailed in the sections below.

Highways

4.36 There are a number of constraints associated with an eastern alignment in relation to the positioning of the new junction on Radwinter Road. The Applicant does not own or control any land immediately to the east of the Site fronting Radwinter Road, therefore, the position of a roundabout would require land under the Applicant's control and/or existing adopted highway in order to satisfy forward visibility requirements associated with the junction.

4.37 The horizontal alignment of Radwinter Road at the eastern end of the Site is challenging with a level difference of between 4-5m between Radwinter Road and the Site. Substantial earthworks and a significant realignment of Radwinter Road would be required to deliver a roundabout junction that complies with the relevant design standards in this location.

4.38 The extent of the realignment and earthworks would result in a substantial amount of dense boundary vegetation (including mature trees) being removed to accommodate the junction and its forward visibility arrangements. The junction would also impact on the existing watercourse on this boundary requiring a culvert under the new link road and, as a result of the removal of vegetation and alterations to the watercourse, this option would result in additional ecological impacts.

Utilities

4.39 There are a number of key constraints in relation to existing utilities that have been identified in relation to an eastern alignment relief road that would not be a consideration with the proposed western alignment relief road corridor. These include an active oil pipeline that would need to be re-routed due to its depth, the likely required gradient of the road and the topography in this area. This would be prohibitively difficult given the pipeline serves key infrastructure, including airports.

Arboriculture

4.40 To facilitate the eastern relief road alignment and its junction arrangements with Radwinter Road and associated earthworks, approximately 160m of roadside mature boundary vegetation would need to be removed. A roadside copse of ash trees with would also be removed resulting in the removal of approximately 500m^2 of scrub woodland habitat.

4.41 The proposed western relief road corridor would require removal of approximately 113m of the existing established hedgerow on the southern side of Radwinter Road. Pruning back of the remaining hedgerow either side will be needed to provide the required visibility splays. The wetland area to the immediate south of Radwinter Road where the junction is proposed provides ample space for new planting to mitigate the loss of vegetation.

Landscape and Visual Impact

4.42 The positioning of a new junction on Radwinter Road at the eastern end of the Site to form access to a relief road would significantly alter the landscape character in this location. At present, Radwinter Road has the feel of a rural road, beyond the urban extent of Saffron Walden forming part of the rural gap between Saffron Walden and Sewards End. A new junction in this location would not only result in ecological and arboricultural impacts but will also have a significant impact on the current landscape character as this would in effect remove the special elements that contribute to its character. The urbanising effect of a new junction in this location, as well as the onward alignment of the relief road, would in effect, result in a more urbanised eastern edge to Saffron Walden which, in turn, could be regarded as contributing to the coalescence of Saffron Walden with Sewards End. Furthermore, the presence of the relief road alignment to the east would, whilst encircling development to the immediate west on the Site, give rise to development pressure on land to the immediate east of the alignment too. If development did occur here then there is a realistic prospect that the development edges of Saffron Walden and Sewards End would meet.

Conclusions

4.43 It has been demonstrated in this chapter, that the proposals have been developed and evolved in response to the technical assessments undertaken by the consultant team and included within this ES, but also through engagement with Council Officers and statutory consultees and the public in order to deliver the Proposed Development. The Applicant and its design team consider this to be the most appropriate solution after having regard to those environmental assessments and engagement with stakeholders to provide the best quality solution for the Proposed Development.

4.44 The next chapter of this ES sets out the planning policy context, insofar as it relates to the Proposed Development.

Planning Policy

5.0 Planning Policy

Introduction

5.1 The planning policy context for the Proposed Development is set out in detail in the Planning Statement, submitted separately as part of the documents accompanying the planning application. The Planning Statement describes how the Proposed Development complies with policy. The ES is objective to arguments about policy compliance, and instead provides information about the planning policy context within which this EIA has been proposed. To this end, this chapter provides an overview of the planning framework within which the Proposed Development is to be assessed and an overview of planning policies which have been considered in the EIA. In identifying the planning framework, consideration has been given to Section 38(6) of the Planning and Compulsory Purchase Act 2004, which states that:

"If regard is to be had to the Development Plan for the purpose of any determination to be made under the Planning Act, the determination must be made in accordance with the Plan, unless material considerations indicate otherwise".

5.2 Individual chapters assessing particular environmental topics provide more detail on relevant policies as they relate to specific topics.

Development Plan Policy

5.3 In accordance with Section 38(6), consideration is given below to the relevant policies of the adopted Development Plan for the Site, which comprises:

- Uttlesford Local Plan (2005) saved policies (2007); and
- Essex Minerals Local Plan (2014).

Uttlesford Local Plan (2005) saved policies (2007)

5.4 The Uttlesford Local Plan's time horizon expired in the year 2011, but UDC undertook an independent review of the extent to which the saved policies of the Uttlesford Local Plan are considered to be consistent with the NPPF – the Uttlesford Local Plan 2005 – National Planning Policy Framework (NPPF) Compatibility Assessment in July 2012.

5.5 The spatial strategy for the District proposed to direct the highest levels of growth to the urban areas of Great Dunmow, Saffron Walden and Stansted Mountfitchet, followed by the A120 transport corridor including sites and/or the safeguarding of key employment sites at Takeley/ Little Canfield (Priors Green) and Felsted/Little Dunmow (Oakwood Park), followed by Selected Key Rural Settlements (Elsenham, Great Chesterford, Newport, Takeley and Thaxted). The Plan defined development limits for these locations which allow for identified growth (policies S1-S3).

5.6 Policy S7 provides protection to the countryside for its own sake. In the countryside, planning permission will only be given for development that needs to take place there or is appropriate to a rural area.

5.7 As recognised on the Local Plan Policies Map (**Figure 5.1**), the Site falls outside of the defined settlement boundary for Saffron Walden to the west and Sewards End to the east. It is not subject to any other designations.

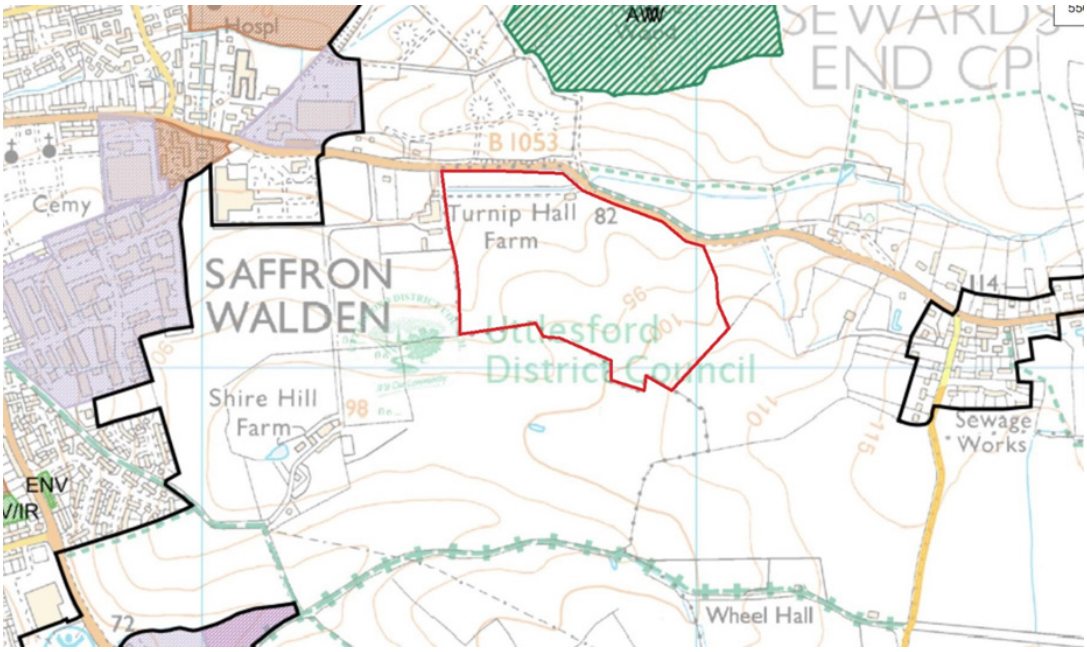


Figure 5.1: Extract from Local Plan Proposals Map (http://www.planvu.co.uk/udc/)

5.8 The following policies are of relevance:

- **Policy H9 – Affordable Housing:** The Council will seek to negotiate on a site to site basis, an element of affordable housing of 40% of the total provision of housing on appropriate allocated and windfall sites, having regard to the up to date Housing Needs Survey, market and site considerations. Details of the affordable housing requirement are also addressed through the neighbourhood plan Policy SW5 – Affordable Housing (below). The neighbourhood plan will be taken into consideration where appropriate, however, the Site is located outwith the designated area and therefore does not directly affect the Site.
- **Policy H10 – Housing Mix:** All developments on sites of 0.1 hectares and above or of 3 or more dwellings will be required to include a significant proportion of market housing comprising small properties. Details of the housing mix are also addressed through the neighbourhood plan Policy SW4 – Housing mix on new developments.
- **Policy GEN6 – Infrastructure Provision to Support Development:** Development will not be permitted unless it makes provision at the appropriate time for community facilities, school capacity, public services, transport provision, drainage and other infrastructure that are made necessary by the proposed development. In localities where the cumulative impact of developments necessitates such provision, developers may be required to contribute to the costs of such provision by the relevant statutory authority.
- **Policy GEN7 – Nature Conservation:** Development that would have a harmful effect on wildlife or geological features will not be permitted unless the need for the development outweighs the importance of the feature to nature conservation. Where the site includes protected species or habitats suitable for protected species, a nature conservation survey will be required. Measures to mitigate and/or compensate for the potential impacts of development, secured by planning obligation or condition, will be required. The enhancement of biodiversity through the creation of appropriate new habitats will be sought.
- **Policy GEN8 – Vehicle Parking Standards**: Development will not be permitted unless the number, design and layout of vehicle parking places proposed is appropriate for the location, as set out in Supplementary Planning Guidance “Vehicle Parking Standards”.

- **Policy ENV5 – Protection of Agricultural Land:** Development of the best and most versatile agricultural land will only be permitted where opportunities have been assessed for accommodating development on previously developed sites or within existing development limits. Where development of agricultural land is required, developers should seek to use areas of poorer quality except where other sustainability considerations suggest otherwise.

5.9 The adopted Local Plan is supported by a range of Supplementary Planning Documents (SPDs) to help guide development proposals:

- Interim Climate Change Planning Policies (approved in February 2021);
- ECC's Parking Standards (September 2009); and
- Essex Design Guide (published in 2018).

Essex Minerals Local Plan (Adopted 2014)

5.10 'Policy S8 - Safeguarding mineral resources and mineral reserves' of the adopted Essex Minerals Local Plan seeks to safeguard areas designated as Mineral Safeguarding Areas (MSA). Mineral Safeguarding Areas as designated for mineral deposits of sand and gravel, silica sand, chalk, brickearth and brick clay considered to be of national and local importance, as defined on the Proposals Map.

5.11 The policy requires that the Mineral Planning Authority is consulted on all planning applications for development on a site located within an MSA that is 5ha or more for sand and gravel. Non minerals proposals which exceed 5ha must be supported by a Minerals Resource Assessment to establish the existence, or otherwise, of a mineral resource of economic importance. If, in the opinion of the LPA, surface development should be permitted, consideration shall be given to the prior extraction of existing minerals.

Material Considerations

The NPPF, July 2021

5.12 The NPPF sets out the Government's planning policies for England and how these should be applied.

5.13 Paragraph 7 states that the purpose of the planning system is to contribute to the achievement of sustainable development. Paragraph 8 states that achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

a) **An economic objective** – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;

b) **A social objective** – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

c) **An environmental objective** – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

5.14 Paragraph 9 states that these objectives should be delivered through the preparation and implementation of plans and the application of the policies in this Framework.

5.15 At the heart of the NPPF lies the presumption in favour of sustainable development, paragraph 11 of the NPPF states that for decision taking, this means:

- Approving development proposals that accord with an up-to-date Development Plan without delay; or
- Where there are no relevant Development Plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:
  - The application of policies within the NPPF that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or
  - Any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.

5.16 The provision of housing to meet needs contributes to the social dimension of sustainable development (paragraph 8). Widening the choice of high-quality homes is recognised as a positive improvement (paragraph 8). To do so, Local Planning Authorities are required to plan for a mix of house sizes, types and tenures to meet local needs (paragraph 60).

5.17 Paragraph 74 of the NPPF states that Local planning authorities should identify and update annually a supply of specific deliverable sites sufficient to provide a minimum of five years' worth of housing against their housing requirement set out in adopted strategic policies, or against their local housing need where the strategic policies are more than five years old. The supply of specific deliverable sites should in addition include a buffer (moved forward from later in the plan period) of:

- 5% to ensure choice and competition in the market for land; or
- 10% where the local planning authority wishes to demonstrate a five year supply of deliverable sites through an annual position statement or recently adopted plan, to account for any fluctuations in the market during that year; or
- 20% where there has been significant under delivery of housing over the previous three years, to improve the prospect of achieving the planned supply.

5.18 The NPPF states that the planning system can play an important role in facilitating social interaction and creating healthy, inclusive communities. The aim should be to involve all sections of the community in the development of Local Plans and in planning decisions. Safe and accessible developments, which contain attractive, well-designed, clear and legible pedestrian and cycle routes and high-quality public space, should be promoted (paragraph 92).

5.19 The NPPF supports a pattern of development that facilitates the use of sustainable modes of transport and reduces greenhouse gas emissions and congestion (paragraph 104). It aims for a balance of land uses within an area so that people can be encouraged to minimise journey lengths for employment, shopping, leisure, education and other activities (paragraph 106).

5.20 Paragraph 110 states that in assessing specific applications for development, it should be ensured that:

- Appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;
- Safe and suitable access to the site can be achieved for all users;
- 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 46; 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.

5.21 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 (paragraph 111).

5.22 Paragraph 132 identifies that design quality should be considered throughout the evolution and assessment of individual proposals, and should be informed by early discussions between applicants, the Local Planning Authority, and the local community. Paragraph 130 states that permission should be refused for developments of poor design which fail to make opportunities for improving the character and quality of an area and the way it functions.

5.23 Paragraph 130 provides guidance on what constitutes good design, stating that local planning policies and decisions should aim to ensure that new developments:

- Will function well and add to the overall quality of the area;
- Are visually attractive as a result of good architecture and appropriate landscaping;
- Respond to local character and history whilst not preventing or discouraging innovation;
- Establish a strong sense of place;
- Optimise the potential of the Site to accommodate development, creating and sustaining an appropriate mix of uses (including the incorporation of public space); and
- Create safe and accessible environments.

5.24 Paragraph 124 sets out the approach for achieving appropriate densities of development. In particular, decisions should support development that makes efficient use of land, taking into account: the identified need for different types of housing and other forms of development; local market conditions and viability; the availability and capacity of infrastructure and services; the desirability of maintaining an area's prevailing character and setting; and, the importance of securing well-designed, attractive, and healthy places. Paragraph 123 recognises that where there is an existing shortage of land for meeting an identified housing need, it is important that planning decisions avoid homes being built at low densities and ensure that developments make optimal use of the potential of each Site.

5.25 Paragraph 130 states that planning decisions should, inter alia:

- Ensure that developments will function well and add to the overall quality of the area;
- Are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;
- Establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit;
- Optimise the potential of the Site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) and support local facilities and transport networks; and
- Create places that are safe, inclusive and accessible and which promote health and wellbeing, with a high standard of amenity for existing and future users; and where crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesion and resilience.

5.26 Paragraph 134 states that development that is not well designed should be refused, especially where it fails to reflect local design policies and government guidance on design, taking into account any local design guidance and supplementary planning documents such as design guides and codes. Conversely, significant weight should be given to:

- a) development which reflects local design policies and government guidance on design, taking into account any local design guidance and supplementary planning documents such as design guides and codes; and/or
- b) outstanding or innovative designs which promote high levels of sustainability, or help raise the standard of design more generally in an area, so long as they fit in with the overall form and layout of their surroundings.

5.27 The NPPF expects development to contribute to and enhance the natural and local environment within Paragraph 174, inter alia, by:

- Protecting and enhancing valued landscapes, geological conservation interests and soils;
- Recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land;
- Minimising impacts on biodiversity and providing net gains in biodiversity where possible, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- Protecting new and existing development from different forms of pollution or land instability; and
- Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

5.28 Paragraph 183 sets out how proposals should also ensure that: Sites are suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation; after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and adequate Site investigation information, prepared by a competent person, is presented.

5.29 In determining applications which cause harm to heritage assets directly, or indirectly, through affecting a complementary setting, the NPPF recommends that 'great weight' should be given to their conservation when reaching a planning decision (Paragraph 199).

5.30 The more important the asset, the greater the weight that should be ascribed. As heritage assets are irreplaceable, it is noted that any harm or loss should require clear and convincing justification. It notes that 'substantial harm' to or loss of designated heritage assets of the highest significance should be wholly exceptional and exceptional for Grade II listed buildings and conservation areas (Paragraph 200).

5.31 Paragraph 202 clarifies that, where a development proposal will lead to 'less than substantial harm' to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing an optimal viable use.

5.32 Paragraph 203 notes that effects on the significance of non-designated heritage assets require a balanced judgement weighing the scale of impact on the significance of the heritage asset against the benefits of the proposed development. Where heritage assets are to be lost, Paragraph 199 confirms that an appropriate record of the elements to be lost should be provided and both disseminated and archived by the developer.

National Planning Practice Guidance

5.33 The National Planning Practice Guidance (NPPG) replaced previous planning guidance documents in March 2014. The NPPG is intended to reflect and support (but not replace) the NPPF and the core policy principles of the presumption in favour of sustainable development.

5.34 The NPPG includes (but is not limited to) guidance relating to the relevant legislation for EIA (paragraphs 001 (ref: ID: 4-001-20170728)), the purpose of EIA (002 (ref: ID: 4-002-20140306)), processes (003 (ref: ID: 4-003-20170728) and the application of the regulations (004 (ref: ID: 4-004-20170728)).

Emerging Uttlesford Local Plan

5.35 The emerging new Local Plan for Uttlesford was recently subject to an Issues and Options level consultation, which closed in April 2021. The Local Development Scheme (approved in October 2020) identifies that the Plan will be submitted for Examination in around August 2023, with adoption in around July 2024. As the emerging new Local Plan is at such an early stage of its preparation and contains no proposed draft allocations, it is considered that it cannot be afforded any weight in the decision-making process at the present time.

Conclusions

5.36 This chapter has outlined the National Guidance, along with the Local Planning Policies which are applicable to the EIA and which are to be considered when appraising the Proposed Development on the Site. The EIA has been undertaken and the ES prepared within the context of these policies, demonstrating that the proposals are in accordance with Local and National Planning Policy. Additional legislation, guidance and policy specific to each environment topic have been considered further where necessary in the appropriate ES chapters.

5.37 The remainder of the ES now provides detailed assessments into the environmental effects of the Proposed Development on the following:

- Agriculture;
- Air Quality;
- Ecology;
- Flood Risk and Drainage;
- Landscape and Visual;
- Noise and Vibration;
- Socio-Economics;
- Transport;
- Cumulative Effects; and
- Conclusions.

Agriculture

6

6.0 Agriculture

Introduction

6.1 This chapter addresses the soil and agriculture impacts of the Proposed Development. It has been prepared by Land Research Associates Limited.

6.2 This chapter is supported by the following Technical Appendix:

- **Appendix 6.1**: Agricultural Land Quality Report (ref: 1771/1 dated February 2021).

Potential Impacts

6.3 The potential impacts as a result of the Proposed Development include:

- Loss of agricultural land to built development; and
- Damage or loss of soil resources.

Methodology

6.4 The collection of soil resources and agricultural land quality information for the Site involved a desk study and field survey.

6.5 Data sources used in the desk study include the following:

- British Geological Survey (BGS) Mapping (at 1:50,000 scale);
- National Soil Mapping (at 1:250,000 scale);
- Natural England available Agricultural Land Quality Mapping; and
- Meteorological Office Climatological Data.

6.6 This information was then used to inform a soils and Agricultural Land Classification (ALC) survey, carried out to Natural England TIN049 and MAFF post 1988 guidelines. The detailed survey was undertaken in February 2021 and carried out at a density of 1 auger observation every hectare. Soil resources within the Site were identified. The soil data was then used to draw maps showing land quality, identifying any areas of best and most versatile (BMV) land. The work is described fully in the Agricultural Land Quality Report (**Appendix 6.1**).

Assessment Criteria and Assignment of Significance

6.7 There is no nationally agreed scheme for classifying the impacts of development on agriculture or soils and the approach used in this chapter has been developed over a number of years, with regard to the methodology outlined in Chapter 2 of this ES. Impacts of a project can be: adverse, causing significant negative impacts on a receptor; beneficial, resulting in advantageous or positive impacts on a receptor; or negligible.

Relevant Guidance

6.8 NPPG (last updated June 2021) states that:

"Planning policies and decisions should take account of the economic and other benefits of the best and most versatile agricultural land."

6.9 NPPG also highlights that the Defra Code of Practice for the Sustainable Use of Soils on Construction Sites:

"May be helpful when setting planning conditions for development sites."

Receptor Sensitivity/Value

6.10 All natural soils are finite resources, but where sites are to be developed, their quality as a resource for reuse varies. Medium and coarse loamy soils are regarded as of higher value for reuse and so of the highest sensitivity, since these soils are most effective at mitigating the effects of flooding and are of highest quality for reuse in gardens and planting schemes (the most likely to meet British Standards criteria for use at other sites). Lower quality soils such as sandy or clayey topsoils are susceptible to damage and less valuable if lost.

6.11 Permeable coarse or medium textured subsoils are reusable for planting schemes (e.g. to support tree growth) and have a greater function in mitigating the effects of flooding than heavy and slowly permeable subsoils. In some instances, soils have important properties which make them able to support rare habitats (e.g. species diverse calcareous grassland or lowland heath habitats).

6.12 Best and most versatile agricultural land (i.e. Grades 1, 2 & 3a on MAFF's 1988 Agricultural Land Classification system) is considered to be a finite national resource, is given special consideration in national policy, and can be considered to be of higher sensitivity than land in Grades 3b, 4 and 5. In the south-east of the country where best and most versatile land is widespread, the best land (Grades 1 and 2) is considered of higher sensitivity than Subgrade 3a. The loss of lower quality land is considered of lower importance under the planning system of England and Wales.

6.13 Where land is contract-farmed or farmed through a tenancy arrangement without long-term security of tenure and without a long-term history of occupying that land, the sensitivity to loss of use of that land is deemed to be low, because the right of the tenant or contractor to farm the land could cease, with agreed notice, at any time. Conversely, a farm business occupied by a long-term agricultural tenant is likely to be highly sensitive to change. Economic benefits to an owner from sale of agricultural land for development will influence perceived and actual sensitivity (**Table 6.1**).

6.14 The sensitivity criteria used in the assessment of effects upon the two receptors are summarised in **Table 6.1**.

Table 6.1: Sensitivity/Value Criteria

	HIGH	MODERATE	LOW
Agricultural land quality	Grades 1 & 2	Subgrade 3a	Subgrade 3b and grades 3 & 4
Agricultural land user	Long-term Agricultural Holdings Act tenant	Long-term Agricultural Holdings Act tenant	Full time owner-occupied farm business that will gain sufficiently from sale of land to be economically unaffected OR agricultural user on a short-term tenancy or licence

	HIGH	MODERATE	LOW
Soil resource	Permeable coarse loamy and medium loamy soils, or other soils capable of supporting valuable habitats	Fine textured or sandy topsoils not capable of supporting valuable habitats Mixed permeable and slowly permeable subsoils	Damaged or contaminated soils Slowly permeable subsoils

Magnitude of Impact

6.15 The magnitude of effect on topsoil resources makes the assumption that, as a valuable finite resource, the requirement should be to protect topsoils from damage. However, since built developments often generate large surpluses of topsoil, the primary requirement is considered to be that sufficient topsoil should be protected to complete all on-site landscaping/greenspace requirements (provided the baseline resource is suitable for the proposed uses). Failure to do so is regarded as a major magnitude effect. If all topsoil is protected from damage, the effect is regarded as negligible. As few built developments are likely to require more than 50% of topsoil for reuse, losses below this figure are regarded as minor.

6.16 Subsoil compaction under greenspace areas increases flood risk (and is not typically accounted for in SuDS design). Severe compaction is also likely to adversely affect the success of landscaping/ecological planting schemes. Magnitude is considered as a percentage of the development scheme. Compaction of greater than 10% of the Site is considered as major magnitude as it is likely to result in tangible increases in runoff volumes, of a magnitude which could affect the efficacy of SuDS design capacity.

6.17 The magnitude of effect on best and most versatile land will depend on the amount to be taken by the Proposed Development. Schedule 4, paragraph y of the Town and Country Planning (Development Management Procedure) (England) Order 2015 only requires Natural England to be consulted (on behalf of the Secretary of State for the Environment, Food and Rural Affairs) on development that involves the loss of not less than 20ha of Grades 1, 2 or 3a agricultural land. Consequently, the magnitude of losses smaller than this threshold is considered to have a minor effect on the national stock of best and most versatile land. Losses of over 80ha of best and most versatile land are equivalent to the size of a medium to large farm and consequently the magnitude of effect is considered to be major. The judgment-based classification is given in **Table 6.2.**

6.18 In considering the magnitude of the effect on agricultural use and users, it is necessary to consider what proportion of the land utilised by a farm business will be taken by the Proposed Development, whether the farm will remain a viable business after development is complete and how much restructuring might be necessary as a result of the Proposed Development. **Table 6.2** gives examples of adverse effects of different magnitude on farm businesses.

Table 6.2: Impact Magnitude Criteria

	MAJOR	MODERATE	MINOR	NEGLIGIBLE
Agricultural land	Irreversible loss of >80ha of best and most versatile land	Irreversible loss of 20-80ha of best and most versatile land	Irreversible loss of 5-20ha of best and most versatile land	Irreversible loss of <5ha of best and most versatile land

	MAJOR	MODERATE	MINOR	NEGLIGIBLE
Agricultural land user	Full-time farm business rendered unworkable and unviable. The farmer will have to seek alternative means of income	Reduction in net farm income requiring such that substantial restructuring is required	Reduction in net farm income such that only minor restructuring is necessary	Minimal effects, such as changed field accesses, not necessitating farm restructuring
Soil resource	Loss of >80% of topsoil resources and insufficient topsoil protected for on-site uses. Subsoil compaction of >10% of Site	Loss or irreversible damage to 50-80% of topsoil resources. Compaction of 5-10% of subsoils	Loss or irreversible damage to <50% of topsoil resources. Compaction of <5% of subsoils	Only minor disturbance of soils within the Site

6.19 The significance matrix is shown in **Table 6.3.**

Table 6.3: Significance Matrix

		BASELINE SENSITIVITY				
		VERY HIGH	HIGH	MODERATE	LOW	VERY LOW
MAGNITUDE OF CHANGE	MAJOR BENEFICIAL	Major Beneficial	Major-Moderate Beneficial	Moderate Beneficial	Moderate/ Minor Beneficial	Minor Beneficial
	MODERATE BENEFICIAL	Major-Moderate Beneficial	Moderate Beneficial	Moderate/Minor Beneficial	Minor Beneficial	Minor/ Negligible Beneficial
	MINOR BENEFICIAL	Moderate Beneficial	Moderate/ Minor Beneficial	Minor Beneficial	Minor/ Negligible Beneficial	Negligible
	NEGLIGIBLE	Negligible	Negligible	Negligible	Negligible	Negligible
	MINOR ADVERSE	Moderate Adverse	Moderate/ Minor Adverse	Minor Adverse	Minor/ Negligible Adverse	Negligible
	MODERATE ADVERSE	Major-Moderate Adverse	Moderate Adverse	Moderate/Minor Adverse	Minor Adverse	Minor/ Negligible Adverse
	MAJOR ADVERSE	Major Adverse	Major-Moderate Adverse	Moderate Adverse	Moderate/ Minor Adverse	Minor Adverse

Limitations

6.20 There are no published or widely-accepted assessment criteria for impacts on agricultural land resources (i.e. best and most versatile land) or soil resources. The assessment method used by Land Research Associates has been developed in-house over a number of years and been found to be robust and acceptable on many previous proposals and EIAs. Impact magnitudes for loss of best and most versatile land relates to consultation thresholds in Technical Information Note 049 (TIN049), published by Natural England to provide general guidance. Impact decisions can also be based on the loss of such land in relation to the quantum of best and most versatile land in the local area.

Existing Baseline Conditions

Agricultural land

6.21 The survey area comprises all agricultural land (17.1 ha) within the Application Site (18.3 ha). The survey area currently comprises two arable fields and an agricultural building to the north.

6.22 The surveyed land includes 3.8ha of Grade 2 quality agricultural land and 13.1ha of subgrade 3a land. The distribution of land quality and grading descriptions are provided in Technical **Appendix 6.1**.

Agricultural Land User

6.23 The land within the Application Site is tenanted out as part of a wider c. 160ha holding. The tenant owns approximately 40ha outside of the Application Site and tenants a further 120ha. The tenant uses a contractor to farm the land, most of which is in arable rotation with the exception of one field which is in grass. There is one year remaining on the tenant's lease of land within the Application Site.

Soil Resources

6.24 The Site is underlain by two main soil types:

- Calcareous clays and heavy clay loams over chalk with permeable subsoil of variable depth. These soils underlie approximately 13.1ha (76%) of the Site.
- Deep clays in the south and east comprising calcareous clay topsoil over slowly permeable clay subsoil. These soils underlie approximately 3.8ha (22%) of the Site.

6.25 The distribution of soil types are shown by Map 3 in **Appendix 6.1** and a detailed description of the soils in Technical **Appendix 6.1**.

6.26 None of the soils were found to currently support valuable habitats.

Evolution of the Baseline Conditions without Development

6.27 Without implementation of the development, there are not predicted to be any significant changes in baseline conditions.

Evaluation of Predicted Impacts

Agricultural Land

6.28 The loss of the agricultural land resource will be progressive through phased construction. The significance of this impact is considered post-completion, however, at which point all land will be removed from agricultural use (a long term effect).

6.29 The potential loss of 3.8ha of Grade 2 land is regarded as a negligible magnitude change to a high sensitivity resource. The potential loss of 13.1ha of subgrade 3a land is regarded as a minor magnitude adverse change to a moderate sensitivity resource. Overall, the potential loss of agricultural land is regarded as a **minor adverse effect.**

Agricultural Land User

6.30 The Proposed Development will result in the loss of use of 13.1ha of land to the tenant. The tenant has a short time left on the lease (one year) and access to wider holdings (owned and tenanted) that will not be affected by the Proposed Development. The effect of the Proposed

Development is likely to result in a reduction in net farm income for the tenant resulting in minor restructuring, a minor magnitude adverse change to a low sensitivity receptor – a **minor/ negligible adverse effect**.

Soils

6.31 The Proposed Development could potentially result in the loss of all topsoils during stripping and stockpiling if not carefully managed, meaning insufficient resources are available to complete landscaping. These are permanent effects.

6.32 The proportion of proposed built development within the Site is approximately 45%, the remaining 55% of the Proposed Development comprises greenspace (Green Infrastructure, woodland and SuDS attenuation basins). A maximum of approximately 70% of the Site area (including land within the built area intended for greenspace) could be compacted. Such compaction would adversely affect drainage, and would lead to increased surface water flood risk (beyond that mitigated by proposed SuDS schemes). It would also restrict rooting depth and affect the success of proposed planting schemes.

6.33 The soil resources within the Site are fine loamy and slowly permeable and, therefore, are considered to be moderate to low sensitivity receptors. The potential damage of up to 70% of the resource is moderate magnitude. This is a potential **moderate/minor adverse** impact of the Proposed Development.

Mitigation

Agricultural Land

6.34 No mitigation is possible for the loss of agricultural land to built development.

Agricultural Land User

6.35 Maintaining accesses to parts of the Site not under construction in early stages of the Proposed Development would allow agriculture to continue into later phases of the development.

Soils

6.36 Mitigation for potential loss or damage to soil resources is available in the form of a site specific Soil Management Plan (in accordance with the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites). This should include:

- Depth and method of topsoil stripping and stockpiling;
- Identification of landscaping topsoil requirements and assessment of suitability and availability of on-site resources; and
- Means of subsoil protection from compaction damage (specific pathways and restricted areas for construction traffic) and remedial measures (such as ripping/subsoiling) to remove damage.

6.37 Further mitigation with regard to subsoil compaction is provided in Chapter 9 (Flood Risk and Drainage).

Residual Effects

6.38 Following the adoption of mitigation, there are judged to be:

- Potential for **minor adverse** effects on agricultural land resources and agricultural land users; and
- Potential for **negligible** adverse effects on soil resources.

Cumulative Effects

6.39 The tenant has sold some of their owned land for development (a beneficial effect due to financial gain). The tenancy agreement on the wider 120ha holding is due to end in September 2022 due to land being sold – a moderate magnitude effect requiring significant restructuring of the farm business. There are no other assessed aspects of the Proposed Development which could result in cumulative effects on soils and agricultural land quality assessed within this chapter of the ES. There are no other projects which could result in cumulative effects.

Monitoring

6.40 Effects on soils should be monitored during the construction process and the condition of soils should be assessed following completion to determine if they remain in a condition suitable to support environmental function (drainage and planting). This should be included as part of the CEMP, which can be secured by a suitably worded planning condition.

Summary of Impacts

6.41 Impacts are summarised in **Table 6.4**.

Table 6.4: Summary of Impacts: *Agriculture*

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Loss of grade 2 agricultural land	Nat	High	Neg	Adv	Irrev	LT	Min	None possible	Adv	Irrev	LT	Min
Loss of subgrade 3a agricultural land	Nat	Mod	Low	Adv	Irrev	LT	Min	None possible	Adv	Irrev	LT	Min
Loss or damage to soil	Nat	Mod	Mod	Adv	Irrev	LT	Mod	Implementation of a site-specific Soils Management Plan to identify topsoils with potential reuse value	Adv	Irrev	LT	Neg
Loss of 13.1ha of tenanted land with 1 year on contract	Nat	Low	Mod	Adv	Irrev	LT	Min	Phased development allowing use of land up to termination of contract/completion of construction	Adv	Irrev	LT	Min

Key

Nat: National	Med: Medium	Irrev: Irreversible	LT: Long Term
Neg: Negligible	Mod: Moderate	Adv: Adverse	Min: Minor

Air Quality

7

7.0 Air Quality

Introduction

7.1 This chapter addresses the air quality impacts of the Proposed Development and has been prepared by Kairus Ltd.

7.2 This chapter is supported by the following appendices:

- Appendix 7.1: Air Quality Technical Report;
- Appendix 7.2: Locations of Receptors used in Modelling;
- Appendix 7.3: Location of Saffron Walden AQMA and Monitoring Sites; and
- Appendix 7.4: Results of Air Quality Dispersion Modelling.

Potential Impacts

7.3 The assessment has considered the following potential impacts:

- Nuisance and health impacts as a result of dust and PM_{10} emissions during the construction phase;
- Impacts on existing human receptors as a result of construction traffic related emissions of NO_2 and particulates (PM_{10} and $PM_{2.5}$);
- Impacts on existing human receptors as a result of operational traffic related emissions of NO_2 and particulate matter; and
- Impacts in relation to new exposure through the introduction of new residential receptors to the Site.

Methodology

Legislative Framework and Guidance

7.4 The following legislation and national/local policy has informed the assessment of effects within this chapter, and is detailed further in the Air Quality Technical Report provided in **Appendix 7.1**:

- EU Directive 2008/50/EC of the European Parliament and of the Council; of 21 May 2008 on ambient air quality and cleaner air for Europe;
- Air Quality Regulations 2010 - Statutory Instrument 2010 No.1001;
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland - July 2007;
- NPPF, Ministry of Housing, Communities and Local Government, 2021;
- The Environment Act 1990, Secretary of State; and
- UDC Local Plan 2005.

7.5 The following guidance has informed the assessment of effects within this chapter, and is detailed further in the Air Quality Technical Report provided in **Appendix 7.1**:

- Local Air Quality Policy Guidance (PG16) (Defra 2016);
- Local Air Quality Technical Guidance (LAQM.TG(16)) (Defra 2016);
- Guidance on the Assessment of Dust from Demolition and Construction Version 1.1, Institute of Air Quality Management (IAQM 2014);

- Land-Use Planning & Development Control: Planning for Air Quality, Environmental Protection UK (EPUK) and IAQM (IAQM 2017); and
- Air Quality Planning Practice Guidance (Ministry of Housing, Communities & Local Government, 2014).
- UDC Interim Climate Change Planning Policy (March 2021).

Construction Phase

Construction Traffic

7.6 During construction of the Proposed Development, lorries will require access to the Site to deliver and remove materials; earthmoving plant and other mobile machinery may also work on-site including generators and cranes. These machines produce exhaust emissions; of particular concern are emissions of NO_2 and PM_{10}.

7.7 A qualitative review of potential impacts from construction traffic has been carried out with potential trip generation screened against the EPUK & IAQM air quality planning criteria.

Fugitive Dust Emissions

7.8 Construction phase activities associated with the Proposed Development may result in the generation of fugitive dust emissions (i.e. dust emissions generated by site-specific activities that disperse beyond the construction site boundaries).

7.9 If transported beyond the Site boundary, dust can have an adverse impact on local air quality. The IAQM guidance considers the potential for dust nuisance and impacts to human health and ecosystems to occur due to activities carried out during the following stages of construction:

- Demolition (removal of existing structures);
- Earthworks (soil-stripping, ground-levelling, excavation and landscaping);
- Construction (activities involved in the provision of a new structure); and
- Trackout (the transport of dust and dirt from the construction site onto the public road network where it may be deposited and then re-suspended by vehicles using the network).

7.10 A qualitative assessment of air quality impacts due to the release of fugitive dust and particulates (PM_{10}) during the construction phase was undertaken in accordance with the methodology detailed in the IAQM guidance.

7.11 The assessment takes into account the nature and scale of the activities undertaken for each source and the sensitivity of the area to an increase in dust and PM_{10} levels, thus enabling a level of risk to be assigned. Risks are described in terms of there being a low, medium or high risk of dust impacts.

7.12 Once the level of risk has been ascertained, then site specific mitigation proportionate to the level of risk is identified, and the significance of residual effects determined.

7.13 A summary of the IAQM assessment methodology is provided in the Air Quality Technical Report, **Appendix 7.1**.

Operational Phase

Introduction

7.14 The prediction of traffic related emissions has been undertaken using the ADMS Roads

dispersion model (Version 5.0.0.1, released March 2020, updated in September 2020). The model uses detailed information regarding traffic flows on the local road network and local meteorological conditions to predict pollution concentrations at specific locations selected by the user. Meteorological data from Stansted Airport Meteorological Station for 2019 has been used for the assessment.

7.15 Quantitative assessment of the impacts on local air quality from road traffic emissions associated with the operation of the Proposed Development have been completed against the current statutory standards and objectives set out in the Air Quality Strategy, provided below in **Table 7.1**.

Table 7.1: Air Quality Objectives set out in the Air Quality Strategy

POLLUTANT	CONCENTRATION	MEASURED AS	DATE TO BE ACHIEVED BY
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times per year	1 hour mean	31 December 2005
	40 µg/m^3	Annual Mean	31 December 2005
Particulate Matter (PM_{10})	50 µg/m^3 not to be exceeded more than 35 times per year	24 hour mean	31 December 2004
	40 µg/m^3	Annual Mean	31 December 2004
Particulate Matter ($PM_{2.5}$)	25 µg/m^3	Annual Mean	31 December 2010

7.16 Full details of the methodology employed for the operational assessment of traffic emissions are set out in the Air Quality Technical Report, **Appendix 7.1**.

Emissions Data

7.17 The model uses traffic flow data and vehicle related emission factors to predict road specific concentrations of NO_x and particulate matter (PM_{10} and $PM_{2.5}$) at selected receptors.

7.18 The assessment has predicted air quality during 2019 for model verification. The emission factors released by Defra in August 2020, provided in the emissions factor toolkit EFT2020_v10.0 (Defra 2020) have been used to predict traffic related emissions of PM and NO_x.

7.19 Emission factors and background data used in the prediction of future air quality concentrations predict a gradual decline in pollution levels over time due to improved emissions from new vehicles and the gradual renewal of the vehicle fleet. In recent years the Defra emission factors published within the Emission Factor Toolkits (EFT) have been found to predict lower NO_x concentrations in future years compared to concentrations measured at roadside locations across the UK. However, research carried out by Air Quality Consultants Ltd (AQC) has now shown that emissions of NO_x from vehicles within the recently released EFT are now matching concentrations recorded at roadside locations between 2013 to 2019. The report concludes that *'the EFT is now unlikely to over-state the rate at which NO_x emissions decline into the future at an 'average' site in the UK. Indeed, the balance of evidence suggests that, on average, NO_x concentrations are likely to decline more quickly in the future than predicted by the EFT*'. This

has removed the need for the use of any sensitivity tests for future year scenarios.

7.20 In light of the above, the relevant future year EFT emissions data have be used to predict concentrations in the 2026 future year scenarios. The year 2026 has been adopted as a worst case assessment of opening year to provide a robust assessment.

Background Data

7.21 The ADMS model estimates concentrations arising as a result of vehicle emissions. It is necessary to add an estimate of local background concentrations to obtain the total concentration for comparison against the air quality objectives.

7.22 Background concentrations of NO_2 for use within the modelling assessment have been taken from monitoring site UTO12, located at the Town Hall. Data for 2019 has been used.

7.23 Estimated concentrations of PM_{10} and $PM_{2.5}$ have been taken from the Defra 2018 based background maps (Defra 2018), published in August 2020. Concentrations have been extracted from the 2019 maps for the grid square which represent the Site and adjacent road network.

7.24 Data for 2019 has been used for the 2026 scenario as a cautious approach, assuming no decline in background levels between the base year and future year scenario.

7.25 Full details of the background data used within the modelling assessment are provided in the Air Quality Technical Report, **Appendix 7.1**.

Traffic Data

7.26 Traffic data for use in the assessment has been provided by Cotswold Transport Planning. The 2019 base flows have been used for model verification against local monitoring data.

7.27 Future year traffic flows have been provided for the following scenarios in 2026:

- 2026 Do Minimum Scenario (including base flows and committed developments); and
- 2026 Do Something Scenario (including the Do Minimum flows plus Proposed Development trips).

7.28 The traffic data used within the assessment is provided in Appendix C of the Air Quality Technical Report, **Appendix 7.1.**

7.29 Traffic generated by other committed developments in the area have been included within the 2026 Do Minimum scenario, including:

- UTT/13/3467/OP - outline planning permission for up to 230 dwellings including link road and primary school;
- UTT/16/1856/DFO - reserved matters for 200 dwellings approved Jan 2017;
- 17/2832/OP - outline application for 100 dwellings approved July 2020; and
- 18/0824/OP - outline application approved April 2019 for up to 150 units.

7.30 The 2026 assessment scenarios also take account of the new link road between Radwinter Road to the north and Thaxted Road to the south, being constructed as part of a number of

committed developments west of the Site including UTT/13/3467/OP and 17/2832/OP.

7.31 Traffic speeds have been assigned to each link road based on local traffic speed restrictions and the presence of junctions. Slower speeds have been assigned at junctions to take account of queuing and turning traffic.

7.32 As part of the application a number of improvements are being proposed to include the following:

- Radwinter Road/Thaxted Road/East Street/Chatters Hill - addition of a short separate right turn lane on Radwinter Road;
- Thaxted Road/Peasland Road - conversion of exiting mini roundabout to traffic signals; and
- High Street/Church Street - conversion of existing priority junction to traffic signals.

7.33 Full details of the junction improvements are set out within the Transport Assessment (Chapter 12 and **Appendix 12.1**) along with the junction analysis. The data shows that the improvements would result in a significant reduction in queue lengths at the relevant junctions compared to the existing situation. These improvements would, therefore, have a positive impact on air quality. The modelling assessment has made no change to vehicle speeds at the relevant junctions under the 'do something' scenario to account for the reduced queue lengths, therefore, the assessment represents a worst-case prediction of emissions at each junction.

Model Outputs and Results Processing

7.34 The ADMS Model has predicted traffic related annual mean emissions of NO_x and PM at existing receptors within Saffron Walden and proposed receptors within the Site. Relevant background concentrations have subsequently been added to the model outputs to provide the total concentrations of each pollutant.

7.35 The predicted concentrations of NO_x have been converted to NO_2 using the LAQM calculator (Version 8.1, released August 2020 (Defra 2020)).

7.36 Analysis of long-term monitoring data suggests that if the annual mean NO_2 concentration is less than 60 µg/m^3 then the one-hour mean NO_2 objective is unlikely to be exceeded where road transport is the main source of pollution. Therefore, in this assessment the annual mean concentration has been used to screen whether the one-hour mean objective is likely to be achieved as recommended within LAQM.TG(16). Similar to NO_2, an annual mean PM_{10} concentrations below 32 µg/m^3 is used to screen whether the 24-hour PM_{10} mean objective is likely to be achieved, the approach also recommended within LAQM.TG(16).

Model Verification

7.37 It is recommended that the model results are compared with measured data to determine whether the model results need adjusting to more accurately reflect local air quality. This process is known as verification.

7.38 To verify the model results, the ADMS model has been used to predict NO_x concentrations at 10 monitoring sites located within the town of Saffron Walden.

7.39 Full details of the verification and calculation of adjustment factors is provided in Appendix D of the Air Quality Technical Report, **Appendix 7.1.**

Receptors

7.40 LAQM.TG(16) describes in detail typical locations where consideration should be given to pollutants defined in the Regulations. Generally, the guidance suggests that all locations 'where members of the public are regularly present' should be considered. At such locations, members of the public would be exposed to pollution over the time that they are present, and the most suitable averaging period of the pollutant needs to be used for assessment purposes.

7.41 For instance, on a footpath, where exposure would be transient (for the duration of passage along that path) comparison with short-term standards (i.e. 15 minute mean or 1 hour mean) may be relevant. In a school, or adjacent to a private dwelling, however; where exposure may be for longer periods, comparison with long-term standards (such as 24 hour mean or annual mean) may be most appropriate. In general terms, concentrations associated with long-term standards are lower than short-term standards owing to the chronic health effects associated with exposure to low level pollution for longer periods of time.

7.42 For the completion of this assessment, air quality has been predicted at the facades of sensitive receptors (i.e. residential properties, schools, care homes etc) located adjacent to the road links included in the model. Each receptor has been selected to represent worst-case exposure to local traffic emissions (R1 to R69).

7.43 A number of receptors have also been selected to represent exposure within the Site (P1 to P6). These receptors have been selected adjacent to Radwinter Road and the new access road to represent worst-case exposure within the Site.

7.44 The details of each receptor are provided in the Air Quality Technical Report, **Appendix 7.1.** Maps showing the location of these receptors are provided in **Appendix 7.2**.

Significance Criteria

7.45 The assessment of likely significant environmental effects as a result of the Proposed Development has taken into account the construction and operational phases.

7.46 The duration of the effects have been assessed as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.

Construction Phase

7.47 The significance of effects predicted during the construction phase of the Proposed Development is based on criteria set out in the IAQM guidance. In the first instance the sensitivity of the area and receptors being assessed are established based on the criteria set out in **Table 7.2**.

Table 7.2: Factors Defining the Sensitivity of the Area and Adjacent Receptors

SENSITIVITY OF AREA/ RECEPTORS	RECEPTOR TYPE	ECOLOGICAL RECEPTORS
	HUMAN RECEPTORS	
Very High	Very densely populated area, more than 100 dwellings within 20m. Local PM_{10} concentrations exceed the objective. Contaminated buildings present. Very sensitive receptors (e.g. oncology units). Works continuing in one area of the Site for more than a year.	European Designated Sites

SENSITIVITY OF AREA/ RECEPTORS	RECEPTOR TYPE HUMAN RECEPTORS	ECOLOGICAL RECEPTORS
High	Densley populated area. 10-100 dwellings within 20m of the Site. Local PM_{10} concentrations close to the objective (e.g. 36-40 µg/m^3). Commercially sensitive horticultural land within 20m.	Nationally designated site
Medium	Suburban or edge of town area. Less than 10 receptors within 20 May 2021 Local PM_{10} concentrations below the objective (e.g. annual mean 30-36 µg/m^3).	Locally Designated Site
Low	Rural area/industrial area. No receptors within 20m. Local PM_{10} concentrations well below the objective (less than 75%). Wooded area between the Site and receptors.	No Designations

7.48 Following the IAQM guidance the risk of each construction activity giving rise to dust effects is determined as high, medium or low. The risk of dust effects is then assessed against the sensitivity of the area/receptors, as defined in **Table 7.2**, to ascertain the significance of effects for each activity (**Table 7.3**). However, as the implementation of best practice mitigation is standard practice following the IAQM guidance, it is recommended that the significance of effects is assessed post-mitigation, using the criteria set out in **Table 7.4**.

Table 7.3: Significance of Effects for Each Activity Prior to Mitigation

MAGNITUDE OF EFFECT	SENSITIVITY OF AREA/RECEPTORS			
	VERY HIGH	HIGH	MEDIUM	LOW
High	Major Adverse	Major-Moderate Adverse	Moderate Adverse	Minor Adverse
Medium	Major-Moderate Adverse	Moderate Adverse	Moderate Adverse	Minor Adverse
Low	Moderate Adverse	Minor Adverse	Minor Adverse	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Table 7.4: Significance of Effects for Each Activity Following the Application of Mitigation

MAGNITUDE OF EFFECT	SENSITIVITY OF AREA/RECEPTORS			
	VERY HIGH	HIGH	MEDIUM	LOW
High	Minor Adverse	Minor Adverse	Negligible	Negligible
Medium	Minor Adverse	Negligible	Negligible	Negligible

MAGNITUDE OF EFFECT	SENSITIVITY OF AREA/RECEPTORS			
	VERY HIGH	HIGH	MEDIUM	LOW
Low	Negligible	Negligible	Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Operational Phase

7.49 The significance of effects determined for the operational phase is based on criteria set out within the IAQM Air Quality Planning Guidance.

7.50 In the first instance the sensitivity of affected receptors has been considered on a scale of high, medium, low or negligible.

7.51 The level of sensitivity is determined based on the type of receptor and where the air quality objectives apply, as detailed in the UK Air Quality Strategy (see Table 3.2, Air Quality Technical Report, **Appendix 7.1**). In this respect, residential dwellings, hospitals and educational facilities are considered to be high sensitivity receptors.

7.52 The magnitude of any change in air quality as a result of the development is then determined as the change experienced from the baseline conditions at each receptor and has been considered on a scale of large, medium, small or negligible and is based on criteria set out within the IAQM guidance, as detailed in **Table 7.5**.

Table 7.5: Data Used to Determine Magnitude of Change

LONG-TERM AVERAGE CONCENTRATION AT RECEPTOR IN ASSESSMENT YEAR	% CHANGE IN CONCENTRATIONS RELATIVE TO AIR QUALITY ASSESSMENT LEVEL			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Small	Medium
76-94% of AQAL	Negligible	Small	Medium	Medium
95-102% of AQAL	Small	Medium	Medium	Large
103-109% of AQAL	Medium	Medium	Large	Large
110% of AQAL	Medium	Large	Large	Large

When using the above criteria the following has been taken into account:

- AQAL – Air Quality Assessment Level which in this assessment refers to the Air Quality Objectives set out in **Table 7.1**.
- The percentage change in concentration should be rounded to a whole number.
- The table should only be used with annual mean concentrations.
- The descriptors are for individual receptors only.
- When defining the concentrations as a percentage of the AQAL use the 'without scheme' concentration where there is a decrease in pollutant concentrations and the 'with scheme' concentrations for an increase.
- The total concentration categories reflect the degree of potential harm by reference to the AQAL value. At exposure, less than 75% of this value i.e. well below, the degree of harm is likely to be small. As exposure approaches and exceeds the AQAL, the degree of harm increases. This change naturally becomes more important when the result is an exposure that is approximately equal to, or greater than the AQAL.
- It is unwise to ascribe too much accuracy to incremental changes or background concentrations, and this is especially important when total concentrations are close to the AQAL. For a given year, it is impossible to define the new total concentrations without recognising the inherent uncertainty, which is why there is a category that has a range around the AQAL, rather than being exactly equal to it.

7.53 The significance of operational effects is then determined based on the level of effect at each receptor, defined by the sensitivity of the receptor and the defined magnitude of change, as set out in **Table 7.6**.

Table 7.6: Level of Effects for Operational Phase

MAGNITUDE OF EFFECT	SENSITIVITY OF RECEPTORS			
	NEGLIGIBLE	LOW	MEDIUM	HIGH
Negligible	Negligible	Negligible	Negligible	Negligible
Low	Negligible	Negligible	Minor	Moderate
Medium	Negligible	Minor	Moderate	Substantial
High	Minor	Moderate	Substantial	Substantial

7.54 The overall significance of effects is informed by professional judgement. For each effect, it has been concluded whether the effect is 'beneficial' or 'adverse'. A statement is also made as to whether the level of effect is 'significant' or 'not significant', again based on professional judgement. In line with EIA Regulations, effects that are classed as negligible or minor are not considered significant.

Limitations and Assumptions

7.55 To ensure transparency within the EIA process, the following limitations and assumptions have been identified.

7.56 The model will be dependent on the traffic data provided by the transport consultants which will have inherent uncertainties associated with them. Further uncertainty will also be introduced as the ADMS model is required to simplify real-world conditions into a series of algorithms.

7.57 A disparity between national road transport emission projections and measured annual mean concentrations of nitrogen oxides and NO_2 have been identified in recent years. Whilst projections suggest that annual mean concentrations from road traffic emissions should have fallen significantly, monitoring has not reflected this and has shown relatively stable levels in some locations. To reduce limitations within the model, appropriate verification and adjustment of the model results has been carried out using Defra recommended approaches, the model has assumed no change in background concentrations between current and future years to provide a cautious prediction of future concentrations and the latest emissions factors have been used which have been shown to represent a better prediction of real-world conditions than previous versions.

Existing Baseline Conditions

UDC Review and Assessment of Air Quality

7.58 UDC has completed a number of detailed assessments of air quality in the district, which has identified exceedances of the annual mean NO_2 objective, and resulted in the declaration of an AQMA covering a circular area with a radius of 1.4 km centred on Elm Grove within the centre of Saffron Walden. The location of the AQMA is shown in **Appendix 7.3**.

7.59 The Site is located 0.8km to the east of the AQMA. Air quality in the immediate vicinity of the Site has been found to be meeting the relevant air quality objectives, however, due to the close proximity of the AQMA, there is the potential for traffic generated during the operational phase to impact air quality within the AQMA.

Air Quality Monitoring

Nitrogen Dioxide

7.60 During 2019, UDC monitored NO_2 concentrations at two automatic monitoring sites and 16 diffusion tube sites within Saffron Walden. Full details of these sites and data recorded at them is set out in Table 5.1 of the Air Quality Technical Report, **Appendix 7.1**. However, a map showing the locations of the monitoring sites is provided in **Appendix 7.3**.

7.61 No monitoring of pollution concentrations is carried out in the immediate vicinity of the development Site. The nearest monitor is located on Radwinter Road approximately 1km to the west of the Site.

7.62 Annual mean NO_2 concentrations below the objective of 40 µg/m^3 were recorded at all monitoring sites in Saffron Walden during 2019. Historically, exceedances of the annual mean objective were recorded at monitoring sties UT001 in 2016, UT004 and UT005 in 2015 and 2016 and UT028 in 2016. However, the data indicates a downward trend in concentrations across the town with concentrations at all four of these sites falling to below the objective between 2017 and 2019.

7.63 At monitoring sites UTT2 and UTT3 exceedances of the 200µg/m^3 1-hour objective limit have been recorded in previous year, however, not on a sufficient number of occasions for the objective to be exceeded which allows up to 18 exceedances of the limit in any given year.

7.64 Short-term NO_2 concentrations cannot be recorded by diffusion tubes, therefore, no short-term data is available. However, as discussed in paragraph 7.37, the LAQM.TG(16) guidance indicates that where the annual mean is below 60 µg/m^3 it can be assumed that exceedances of the 1 hour objective for NO_2 are unlikely to occur. Based on annual mean concentrations recorded across the town, it is unlikely that the short-term NO_2 objective is being exceeded at any of the monitoring locations.

7.65 The baseline assessment of NO_2 indicates that currently both the annual mean and short-term objective limits are being met at locations both within and outside the Saffron Walden AQMA.

Particulate Matter (PM_{10} and $PM_{2.5}$)

7.66 UDC monitor PM_{10} concentrations at one site (UTT3) within Saffron Walden and $PM_{2.5}$ at two sites (UTT1 and UTT3). The locations of both sites are shown in Figure 7.3.2, **Appendix 7.3**.

7.67 PM_{10} and $PM_{2.5}$ concentrations recorded at the above monitoring sites is set out in Tables 5.2 and 5.3 within the Air Quality Technical Report, **Appendix 7.1**.

7.68 Monitoring of PM_{10} shows annual mean concentrations are well below (<75%) the objective at the monitoring site since 2016.

7.69 The monitoring site recorded exceedances of the 24-hour objective limit of 50 µg/m^3 in all four monitoring years since 2016, however, as the objective allows for up to 35 exceedances in any given year, the objective has not been exceeded at this monitoring location.

7.70 The data shows no consistent trend in concentrations with little change in the annual mean recorded during all four years presented.

7.71 The data shows $PM_{2.5}$ concentrations to be well below the annual mean objective of 25 µg/m^3 at the monitoring locations since 2016. The data shows no consistent trend in concentrations with some years showing an increase and others a decrease.

Defra Background Maps

7.72 Additional information on estimated background pollutant concentrations has been obtained from the DEFRA 2018 background maps provided on UK-AIR, the Air Quality Information Resource (http://uk-air.defra.gov.uk). Estimated air pollution concentrations for NO_2, PM10 and $PM_{2.5}$ have been extracted from the 2018 based background pollution maps for the UK and are set out in **Table 7.7**.

7.73 These maps are available in 1km by 1km grid squares and provide an estimate of concentrations between 2018 and 2030. The average concentrations for each grid square representing each of the modelled receptor locations have been extracted from the 2019 base year and are set out in **Table 7.7**.

7.74 The data indicates that background concentrations in the vicinity of the Site are expected to comfortably meet the NO_2, PM_{10} and $PM_{2.5}$ objectives.

Table 7.7: Annual Mean Background Air Pollution Concentrations from Defra Maps (*µ*g/m^3)

OS Grid Square	NO_2	PM_{10}	$PM_{2.5}$
553500, 237500	10.0	15.3	9.6
554500, 237500	9.5	15.5	9.8
553500, 238500	9.9	15.0	9.5
554500, 238500	11.3	14.9	9.7
555500, 238500	8.5	15.7	9.6

Baseline Modelling Results

7.75 Baseline pollution concentrations have been predicted in 2019 at the receptors shown in **Appendix 7.2** using the ADMS Roads dispersion model. Predicted NO_2, PM_{10} and $PM_{2.5}$ concentrations in 2019 are set out in Table 7.4.1, **Appendix 7.4**.

7.76 The modelling is predicting annual mean NO_2 concentrations below the objective limit at all the selected receptors under the 2019 base scenario, although concentrations are predicted to be only just below the objective at receptor R42, located on London Road.

7.77 Based on the annual mean concentrations being less than 60 µg/m^3 at all receptor locations, short-term NO_2 concentrations are meeting the 1-hour objective.

7.78 Annual mean PM_{10} and $PM_{2.5}$ concentrations are predicted to be well below the annual mean objective limits for both pollutants at all receptor locations.

7.79 Given that annual mean PM_{10} concentrations are below 32 µg/m^3, the 24-hour objective is also being met at all locations within the town.

Evolution of the Baseline Conditions without Development

7.80 NO_2, PM_{10} and $PM_{2.5}$ concentrations have been predicted in 2026, assuming a ‘do minimum’ scenario. The results of this modelling are set out in Table 7.4.1, **Appendix 7.4**.

7.81 The model results predict a decline in annual mean NO_2 concentrations between 2019 and 2026, due to improvement in vehicle emissions and changes in the vehicle fleet to include a higher proportion of low emission vehicles. By 2026 annual mean NO_2 concentrations are predicted to be well below the objective at all receptor locations.

7.82 The modelling is predicting a small increase in PM_{10} and $PM_{2.5}$ concentrations between 2019 and 2026, however, at all receptors concentrations remain well below the objective limits.

Predicted Impacts

Construction Phase

7.83 The Site covers an area of 18.3ha and there are residential properties located within 350m of the Site. An assessment of impacts in relation to human receptors is therefore required.

7.84 Dust emissions from construction activities are unlikely to result in significant impacts on ecologically sensitive receptors beyond 50m from the Site boundary. A review of data held on the Defra MAGIC website (Defra 2021) shows no sites designated as important for wildlife within 50m of the Site, therefore, impacts on ecological receptors has not been considered any further within this assessment.

7.85 The data set out in **Table 7.6** indicates background concentrations in the region of 15-16 µg/m^3. Based on professional judgment, it is anticipated that PM_{10} concentrations at the Site and at adjacent properties are unlikely to be much higher than background, therefore, PM_{10} concentrations are expected to be below 24µg/m^3.

Construction Traffic

7.86 Based on the development proposals and anticipated phasing, it is estimated that there would be in the region of 20-30 additional Heavy-Duty Vehicles (HDV) generated on the adjacent road network on any given day.

7.87 The EPUK & IAQM air quality guidance assessment criteria indicate that significant impacts on air quality are unlikely to occur where a development results in less than 25 HDV movements per day in locations within or adjacent to an AQMA and less than 100 HDV outside of an AQMA. Following distribution of the trips on the adjacent road network, it is expected that there would be no more than 25 HDV movements per day on any one road link during the construction phase. It is, therefore, anticipated that construction traffic generated by the Proposed Development would result in a negligible impact on local NO_2 and PM_{10} concentrations. Furthermore, impacts as a result of construction traffic would be temporary and short-term in nature.

7.88 Impacts from construction traffic are not, therefore, considered to be significant.

Construction Dust

7.89 Full details of the assessment of construction dust effects is predicted in Section 6.2 of the Air Quality Technical Report set out in **Appendix 7.1**. However, the results of the assessment are summarised here.

Potential Dust Emission Magnitude

7.90 The dust emission magnitude is based on the scale of anticipated works at the Site and has been classified as small, medium or large for each of the four activities; demolition, earthworks, construction and trackout. A summary of the dust emission magnitude for each activity is set out in **Table 7.8**.

- **Demolition**: There is a single barn that would require demolition as part of the application. The barn has a volume of < 1500 m^3 and, therefore, has a dust emission class of 'small'.
- **Earthworks**: The Site covers an area of 18.3ha (183,000 m^2) and during the earthworks stage it is anticipated that more than 100,000 tonnes of material would be excavated, with more than 10 heavy earth moving vehicles on-site at any one time. The Site is, therefore, considered to have a dust emission class of 'large' with regards to earthwork activities.
- **Construction**: Based on the current design layouts, the total building volume proposed for the Site would be 55,000 to 65,000 m^3 and the main construction materials would be steel and concrete. The Site is, therefore, considered to have a dust emission class of 'medium' with regards to construction activities.

- **Trackout**: Given the size of the Site and nature of the Proposed Development, it is anticipated that there would be in the region of 20-30 HDV accessing the Site on a daily basis. Furthermore, vehicles would be travelling over unpaved roads, which can result in mud and dust trackout onto the adjacent road network. The Site is, therefore, considered to have a dust emissions class of 'medium' with regards to trackout activities.

Table 7.8: Summary of Dust Emissions Magnitude for each Activity

SOURCE	MAGNITUDE
Demolition	Small
Earthworks	Large
Construction	Medium
Trackout	Medium

Sensitivity of Area

7.91 Based on the IAQM guidance, residential dwellings are considered as high sensitivity receptors in relation to both dust soiling and health effects of PM_{10}.

7.92 There is one property located to the west within 20m of the Site boundary. Beyond this the nearest properties are approximately 60m to the west on Griffin Place and Fairfax Drive. To the east, the nearest residential properties are over 200m from the Site. The overall sensitivity of the surrounding area is classed as 'medium' in relation to dust soiling. However, there are no residential properties located within 250m of the building requiring demolition, therefore, the sensitivity to dust effects from demolition will be 'low'.

7.93 As previously discussed, annual mean PM_{10} concentrations in the vicinity of the Site are not expected to exceed 24 µg/m^3. Based on the proximity of sensitive receptors to the Site boundary and the local concentrations of PM_{10}, the sensitivity of the surrounding area is considered to be 'low' with regards human health impacts.

7.94 In relation to trackout, vehicles travelling to and from the Site would travel along Radwinter Road either to the east or west. As a general guidance, significant impacts from trackout may occur up to 500m from large sites, 200m from medium sites and 50m from small sites, as measured from the Site exit. There are fewer than 10 residential receptors within 20m of the roadside located adjacent to Radwinter Road to the west, within 500m of the Site access point. The sensitivity of receptors is, therefore, considered to be 'medium' in relation to dust soiling and 'low' in relation to human health impacts from trackout.

Defining the Risk of Impacts

7.95 The dust emission magnitude, as set out in **Table 7.8**, is combined with the sensitivity of the area to determine the risk of both dust soiling and human health impacts, assuming no mitigation measures are applied at the Site. The risk of impacts associated with each activity is provided in **Table 7.9**.

Table 7.9: Summary of Risk Effects to Define Site Specific Mitigation

SOURCE	ACTIVITY			
	DEMOLITION	EARTHWORKS	CONSTRUCTION	TRACKOUT
Dust Soiling	Negligible	Medium Risk	Medium Risk	Low Risk
Human Health	Negligible	Low Risk	Low Risk	Low Risk

Operational Phase

Impacts at Existing Receptors

7.96 Pollution concentrations predicted under the 'Do Something' scenario and compared against the 'Do Minimum' scenario are set out in Tables 7.4.2 to 7.4.4, **Appendix 7.4**.

7.97 The modelling is predicting annual mean NO_2 concentrations below the objective (AQAL) at all the selected receptors under both 2026 assessment scenarios.

7.98 Traffic generated by the operational development is predicted to increase annual mean NO_2 concentrations by up to 0.3 µg/m^3, which is equivalent to no more than 1% of the AQAL (Table 7.4.2, **Appendix 7.4**). As concentrations are predicted to remain at less than 70% of the AQAL at all receptor locations, the impact is deemed to be negligible based on the criteria set out in **Table 7.5**.

7.99 At all receptor locations considered in the assessment, annual mean NO_2 concentrations are predicted to be less than 60 µg/m^3. Impact on short-term NO_2 concentrations would, therefore, also be negligible.

7.100 Traffic generated by the Proposed Development is predicted to increase annual mean PM_{10} concentrations by no more than 0.1 µg/m^3, which equates to less than 1% of the AQAL (Table 7.4.3, **Appendix 7.4**). The impact on annual mean concentrations would, therefore, be negligible.

7.101 Annual mean concentrations are predicted to remain at less than 32 µg/m^3 at all receptors. The impact on 24-hour PM_{10} concentrations would, therefore, be negligible.

7.102 Traffic generated by the operational development is predicted to increase annual mean concentrations by no more than 0.1 µg/m^3, which equates to <1% of the AQAL (Table 7.4.4, **Appendix 7.4**) and is deemed to be a negligible impact.

Impacts at Proposed Receptors

7.103 Annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations predicted along the northern boundary of the Site and adjacent to the proposed access road are set out in **Table 7.10**.

7.104 The modelling assessment is predicting annual mean concentrations of all three pollutants well below the relevant objective limits.

7.105 Annual mean NO_2 concentrations are also predicted to be significantly less than 60 µg/m^3, while annual mean PM_{10} concentrations are predicted to be well below 32 µg/m^3, therefore, concentrations are meeting the short-term objectives for both pollutants.

Table 7.10: Predicted Annual mean Concentrations at Proposed Receptors under 2026 Do Something Scenario ($\mu g/m^3$)

RECEPTOR	POLLUTANT			SIGNIFICANCE OF IMPACT (EXPOSURE)
	NO_2	PM_{10}	$PM_{2.5}$	
P1	16.7	15.9	9.7	Negligible
P2	18.1	16.4	10.0	Negligible
P3	18.6	16.6	10.1	Negligible
P4	16.5	15.8	9.6	Negligible
P5	17.5	16.2	9.9	Negligible
P6	16.1	15.7	9.6	Negligible

Evaluation of Predicted Impacts

Construction Phase

Construction traffic

7.106 Any emissions associated with construction traffic would be short-term and temporary.

7.107 Effects associated with construction traffic have been determined as **negligible**, therefore, impacts would not be significant.

Construction Dust

7.108 The IAQM guidance recommends that the impacts associated with construction activities are assessed post mitigation given that the majority of measures are mandatory and follow best practice. However, to follow the approach recommended in the EIA Regulations, the effects assessed and set out in **Table 7.8** have been assessed for significance prior to the implementation of mitigation.

7.109 Any impacts associated with construction will be short-term, temporary and reversible.

7.110 The assessed effects are determined as **moderate adverse** based on a medium to low magnitude of change and medium sensitivity of the surrounding area.

Operational Phase

Impacts on Existing Receptors

7.111 The change in pollutant concentrations (NO_2, PM_{10}, and $PM_{2.5}$) has been assessed as **negligible** as a result of traffic generated by the operational development. The effects are, therefore, assessed as not significant at all existing receptors.

Impacts on Proposed Receptors

7.112 Pollutant concentrations at the Site are predicted to be significantly below the relevant air quality objectives. The impact of the development in terms of new exposure is, therefore, assessed as not significant/**negligible**.

Mitigation

Construction Phase

7.113 To ensure there are no significant effects during the construction phase of the development the following mitigation measures will be implemented through a site specific CEMP, which can be secured by a suitably worded planning condition. These measures are based on those recommended within the IAQM guidance:

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- Display the name and contact details of the person accountable for air quality and dust issues on the site boundary (i.e. the environment manager/engineer or site manager);
- Record all dust and air quality complaints, identify cause, take appropriate measures to reduce emissions in a timely manner and record the measures taken;
- Make the complaints log available to the local authority when asked;
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site and the action taken to resolve the situation in the log book;
- Carry out regular site inspections to monitor compliance with the Dust Management Plan (DMP), record inspection results and make inspection log available to UDC when asked;
- Increase frequency of site inspection by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged periods of dry or windy conditions;
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible;
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for extensive periods;
- Avoid site runoff of water or mud;
- Keep site fencing, barriers and scaffolding clean using wet methods;
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site;
- Cover, seed or fence stockpiles to prevent wind whipping;
- Ensure all vehicles switch off engines when stationary - no idling vehicles;
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable;
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials;
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car-sharing);
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction e.g. suitable local exhaust ventilation systems;

- Ensure an adequate water supply on site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate;
- Use enclosed chutes and conveyors and covered skips;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate;
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods;
- Avoid bonfires and burning of waste materials;
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional controls measures are in place;
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit;
- Access gates to be located at least 10m from receptors where possible;
- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results and make the log available to the local authority when asked. Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit;
- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Use hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as possible;
- Only remove the cover in small areas during work and all at once;
- Avoid scabbling if possible;
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust;
- Use water-assisted dust sweepers on the access and local roads, to remove, as necessary, any material tracked out of the site;
- Avoid dry sweeping of large areas;
- Ensure vehicles entering and leaving the site are covered to prevent the escape of materials during transport; and
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud).

Operational Phase

7.114 The modelling assessment has predicted a negligible impact on local air quality as a result of operational traffic. However, it is acknowledged that operational traffic will contribute to local air quality as a result of additional vehicle emissions. The following mitigation measures have been incorporated into the scheme design to help reduce emissions:

- Secure cycle storage for residential units without covered parking or garages;
- Passive provision for electric charging points will be provided for all on-plot car parking spaces;
- A travel pack will be provided to all residents as part pf the Travel Plan measures setting out public transport options, promoting cycling and walking routes;
- A Travel Plan (TP) will be developed for the Site which will implement measures to encourage the use of alternative more sustainable modes of transport and reduce the use of single occupancy car journeys;
- Where provided, all gas fired boilers will meet a minimum rating of <40 KgNOx/kWh;
- Provision of a bus stop on Radwinter Road in close proximity to the new Site access point providing access to services between Aduley End Train Station and Haverhill and providing an additional point on the east/west route connecting secondary schools in the area; and
- Provision of large public open space area for recreational purposes, reducing the need for residents to travel further afield for recreational needs.

7.115 The above measures can be controlled by either appropriately worded planning conditions or legal agreement. It is also noted that the Site is within walking distance of bus stops serving local bus routes between Saffron Walden and Stansted Airport and Bishops Stortford, plus a local circular route to various destinations within the town.

Residual Effects

Construction Phase

7.115.1 Following implementation of the measures that will be incorporated into the site-specific CEMP, the residential effects will be **negligible** and, therefore, not significant.

Operational Phase

7.116 Following incorporation of the mitigation measures within the scheme design, residential effects will remain **negligible** and not significant.

Cumulative Effects

Construction Phase

7.117 Potential cumulative construction effects could occur should construction of other consented development occur at the same time as the Proposed Development, and where receptors are within sufficient distance of each site to experience effects from both. The IAQM guidance indicates that significant effects can occur up to 350m from construction activities, therefore, cumulative effects would only occur where there are other construction sites within 700m of the Proposed Development with receptors in between.

7.118 The following schemes are within 700m of the Proposed Development and could be under construction at the same time:

- UTT/13/3467/OP - outline planning permission for up to 230 dwellings including link road and primary school;
- UTT/16/1856/DFO - RM for 200 dwellings approved Jan 2017;
- 17/2832/OP - outline application for 100 dwellings approved July 2020; and
- 18/0824/OP - outline application approved April 2019 for up to 150 units.

7.119 Significant cumulative effects are unlikely to occur as each development is anticipated to employ similar dust mitigation techniques such that the individual construction phase effect should be not significant, alone or cumulatively. Furthermore, it is unlikely that construction traffic from the other committed development would use the same construction traffic routes as specified for this development. Therefore, cumulatively, the trip generation is unlikely to exceed the EPUK and IAQM assessment criteria and impacts are unlikely to be significant.

Operational Phase

7.120 It is understood that the future baseline traffic flows include the committed trip generation associated with the following schemes:

- UTT/13/3467/OP - outline planning permission for up to 230 dwellings including link road and primary school;
- UTT/16/1856/DFO - RM for 200 dwellings approved Jan 2017;
- 17/2832/OP - outline application for 100 dwellings approved July 2020; and
- 18/0824/OP - outline application approved April 2019 for up to 150 units.

7.121 The modelling assessment has, therefore, taken account of traffic generated by approved developments in the vicinity of the Site. Concentrations of all three pollutants would remain below the relevant air quality objectives with both the approved developments and Proposed Development in operation, therefore, the assessment of cumulative effects is inherent to the assessment provided and cumulative impacts are considered to be negligible in terms of local air quality and, therefore, not significant.

Monitoring

7.122 The residual effects have been assessed as not significant, therefore, no monitoring is required.

Summary of Impacts

7.123 The likely significant effects of the construction and operational phases of the Proposed Development in terms of air quality have been assessed.

7.124 On the basis that there will be a site specific CEMP which will incorporate measures to reduce dust and traffic emissions, emissions as a result of construction activities will be adequately mitigated and impacts will be not significant.

7.125 The ADMS dispersion model has been used to predict the impact of the operational development on local NO_2, PM_{10} and $PM_{2.5}$ concentrations. The assessment has used conservative assumption to predict impacts in 2026.

7.126 The assessment has predicted a negligible impact on concentrations of all three pollutants as a result of operational traffic. The impact of the proposals on existing receptors would be not

significant.

7.127 The assessment has predicted NO_2, PM_{10} and $PM_{2.5}$ concentrations 'well below' the relevant objective limits at all proposed receptors. The impact of the Development in relation to new exposure would be not significant.

7.128 A summary of the effects is set out in **Table 7.11**.

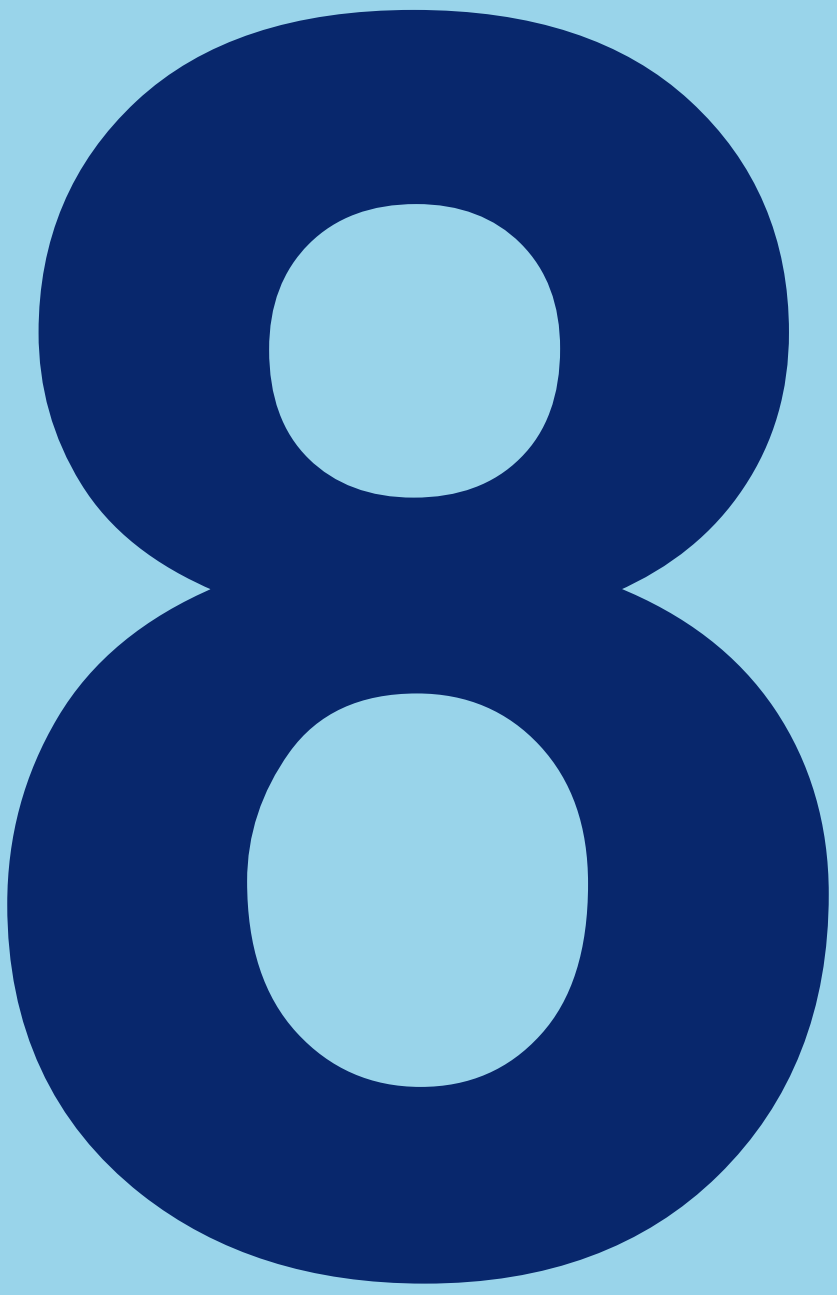
Table 7.11: Summary of Effects: *Air Quality*

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Impact of Construction Dust and PM_{10}	Loc	Medium	Medium-low	Adv	Reversible	ST	Mod	Measures included within CEMP includes - Sheeting of loose aggregates; use dust suppression tools; regular inspection and cleaning of local highways; ensure all construction plant and equipment is well maintained; no unauthorised burning of materials on-site.	Adv	Rev	ST	Neg
Impact of Operational Traffic NO_2, PM_{10} and $PM_{2.5}$	Loc	High	Neg	Adv	Irrev	LT	Neg	Travel Plan, EV charging, cycle and pedestrian links, encourage use of alternative transport, connections to bus network.	Adv	Irrev	LT	Neg
New Exposure NO_2, PM_{10}, $PM_{2.5}$	Loc	High	Neg	Ben	Irrev	LT	Neg	N/A.	Ben	Irrev	LT	Neg

Key

Loc: Local	Med: Medium	Ben: Beneficial	Irrev: Irreversible	LT: Long Term
Neg: Negligible	Mod: Moderate	Adv: Adverse	Rev: Reversible	ST: Short Term

Ecology



8.0 Ecology

Introduction

8.1 This chapter addresses the ecological impacts of the Proposed Development and has been prepared by Harris Lamb Property Consultancy (HLPC). This chapter is based on details set out in Chapter 1 and Chapter 4 of the ES.

8.2 In accordance with the EIA Regulations (2017) the Ecological Assessment and ES chapter have been carried out by competent experts, comprising ecologists within the Chartered Institute for Ecology and Environmental Management (CIEEM).

8.3 This chapter is supported by the following appendices:

- **Appendix 8.1a** Copies of Scoping Correspondence
- **Appendix 8.1b** Preliminary Ecological Appraisal (PEA)
- **Appendix 8.2** Target Notes and Site Photographs
- **Appendix 8.3** Habitat Suitability Calculation
- **Appendix 8.4** Confidential Badger Survey
- **Appendix 8.5** Draft Biodiversity Metric

8.4 This Ecological Impact Assessment (EcIA) identifies potential ecological constraints to the Proposed Development and indicates where avoidance and mitigation measures are necessary. It also identifies opportunities for ecological enhancement to the Site.

Potential Impacts

8.5 The Proposed Development has the potential to affect ecology through temporary and permanent loss of habitats which support a range of protected species. Timing of construction has the potential to affect protected species without additional precautionary mitigation measures implemented. The Proposed Development has been designed in consultation with ecologists to design out impact as far as practicable and to leave the biodiversity value of the Site in a measurably better condition over the medium to long term.

8.6 HLPC contacted ECC to agree the scope of the ecological survey in February 2021. No consultation response relating to ecology was provided at the time of writing this report. A copy of the request has been provided in **Appendix 8.1a**.

8.7 The Essex Biodiversity Validation Checklist (Essex County Council, June 2015) was completed as part of the scoping exercise. In compliance with the checklist, a Preliminary Ecological Appraisal was undertaken for Stage 1 (**Appendix 8.1b**) which formed the basis of the scope of the following assessment in the absence of feedback from the scoping exercise.

8.8 The Validation Checklist states “Where a formal Environmental Impact Assessment (EIA) is required under the EIA regulations, the Biodiversity Statement and Mitigation Plan should be incorporated in to the Ecology Chapter of the Environmental Statement”. Stage 3 of the checklist require sites, habitats and species evaluation and is included under the ‘Existing Baseline Conditions’ section within this chapter. Stage 4 of the checklist requires a Biodiversity Statement and Mitigation Plan with is set out within the ‘Predicted and Evaluation of Predicted Impacts’ and ‘Mitigation’ sections of this Chapter.

Methodology

8.9 An EcIA has been undertaken in line with current best practice guidance (CIEEM, 2018) and includes:

- A desk-based assessment to identify any records of protected and/or notable habitats and species, and designated nature conservation sites in the vicinity of the Site;
- A Site survey comprising an Extended Phase 1 habitat survey including the recording of any evidence of the presence of protected, priority and/or Invasive Non-Native Species (INNS);
- An assessment of the potential impacts of the works on the habitats and species present at the Site and the surrounding areas;
- The design of suitable mitigation and avoidance measures to ensure ecological impacts are kept to a minimum and proposals for suitable enhancement measures; and
- The Ecological Assessment is based on a search for existing information combined with field surveys. The different elements are discussed below.

Desk-Based Assessment

8.10 The desktop study was undertaken in September 2020 and included:

- Essex Wildlife Trust Biological Record Centre (EWTBRC);
- Multi Agency Geographic Information for the Countryside (MAGIC) website[1];
- Ordnance Survey (OS)[2]; and
- Aerial imagery[6].

8.11 The geographical extent of the search area for biodiversity information was related to the significance of sites and species and potential zones of influence which might arise from development within the Site. For this Site, the following search areas were considered to be appropriate:

- 10km around the Site boundary for sites of International Importance (e.g. Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar site));
- 2km around the Site boundary for sites of National or Regional Importance (e.g. Sites of Special Scientific Interest (SSSI)), protected or otherwise notable species and non-statutory designated sites of County Importance (e.g. LWS);
- 1km for ancient woodland; and
- 2km for biological records.

8.12 The relative proximity and/or accuracy and age of records for protected and notable species were considered during the appraisal to assist in determining the potential impact of the Proposed Development on these key ecological components.

8.13 No previous ecological information relating to the Site was identified. However, a review of an Ecological Appraisal of an adjacent residential scheme (ref: UTT/13/3467/OP *'outline planning permission comprising the erection of 200 dwellings of mixed size and tenure, including link road, residential access roads, public open space, surface water attenuation areas and landscaping, and access to and preparation of land for a one form entry primary school)'* by First Environmental Consultants Ltd in 2016 was undertaken to provide wider understanding of the

1 www.magic.gov.uk accessed September 2020
2 www.bing.co.uk accessed September 2020

ecological value of the area.

Field survey

Flora

8.14 HLPC carried out an initial Extended Phase 1 Habitat Survey of the Site in September 2020 which informed the PEA (**Appendix 8.1b**) and was updated in May and June 2021. The survey was carried out by an experienced and suitably qualified ecologist and a full member of CIEEM. The survey was undertaken in accordance with 'Extended Phase 1' Methodology (JNCC, 2010).

8.15 Specific habitat features were mapped using Target Notes (TN) to record ecological features of particular note, where necessary.

8.16 Based on the habitats present on-site and within the immediate area, surveys for the following species/species groups were undertaken:

- Amphibians;
- Badgers;
- Bats (foraging and roosting)
- Breeding Birds; and
- Hazel dormice.

Fauna

8.17 The fauna included within this assessment is based on the habitats present, data from the desk-based searches, and the following legislation:

- Wildlife and Countryside Act 1981 (as amended);
- The Protection of Badgers Act 1992;
- The Conservation of Habitats and Species Regulations 2017 (as amended);
- The NERC Act 2006 – S41 Species of Principal Importance (SPI) for the conservation of biodiversity; and
- The Countryside Rights of Way Act 2000.

Amphibians

8.18 Waterbodies within 250m of the Site boundary were identified using online Ordnance Survey maps and aerial imagery[3] and were assessed, for their suitability to support great-crested newts *Triturus cristatus* using a Habitat Suitability Index (HSI). The HSI is a numerical index, between 0 and 1. Values close to 0 indicate unsuitable habitat, 1 represents optimal habitat (Oldham *et al.*, 2000)[4].

Reptiles

8.19 An assessment of the suitability of the habitats present to support common reptile species was undertaken. In accordance with current guidance, this assessment involved a review of habitats and habitat structure for suitable shelter for reptiles such as areas of scrub and woodpiles, grassland with well-developed and varied structure, areas suitable for basking, large tussocks etc.

3 www.bing.com/maps accessed September 2020
4 Oldham et al., 2000. Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus). Herpetological Journal 10, 143-155

Birds

8.20 Bird species identified at the time of survey were noted and nesting birds recorded as seen. An assessment of habitats was undertaken to determine the likely value to breeding and foraging birds.

8.21 At the time of writing this chapter, a Breeding Bird Survey had been commissioned and the results will be presented as an Addendum to this ES, post submission of the planning application.

Bats

8.22 Trees were assessed externally from ground level with the use of torch and binoculars, where required by a licensed bat ecologist, James Patternden (Class 2 licence number 2015-106-CLS-CLS and Bat Low Impact Class Licence RC162, Annex B and D), and supported by consultant ecologist, Josh Randhawa in May 2021. During the survey, Potential Roosting Features (PRF) for bats following current best practice[5],[6],[7] were recorded and trees considered to have bat roost potential identified for additional survey.

8.23 The potential for the Site and immediate surrounds to support foraging and commuting bats was also assessed in May 2021, with particular regard given to the presence of continuous treelines

5 Bat Conservation Trust (BCT) 2016. Bat Surveys for Professional Ecologists, Good Practice Guidelines, 3rd Edition
6 Mitchell-Jones, A.J, & McLeish, A.P. Ed. 2004. Bat Workers' Manual 3rd Edition
7 BCT (2015) Surveying for Bats in Trees and Woodland – Guide

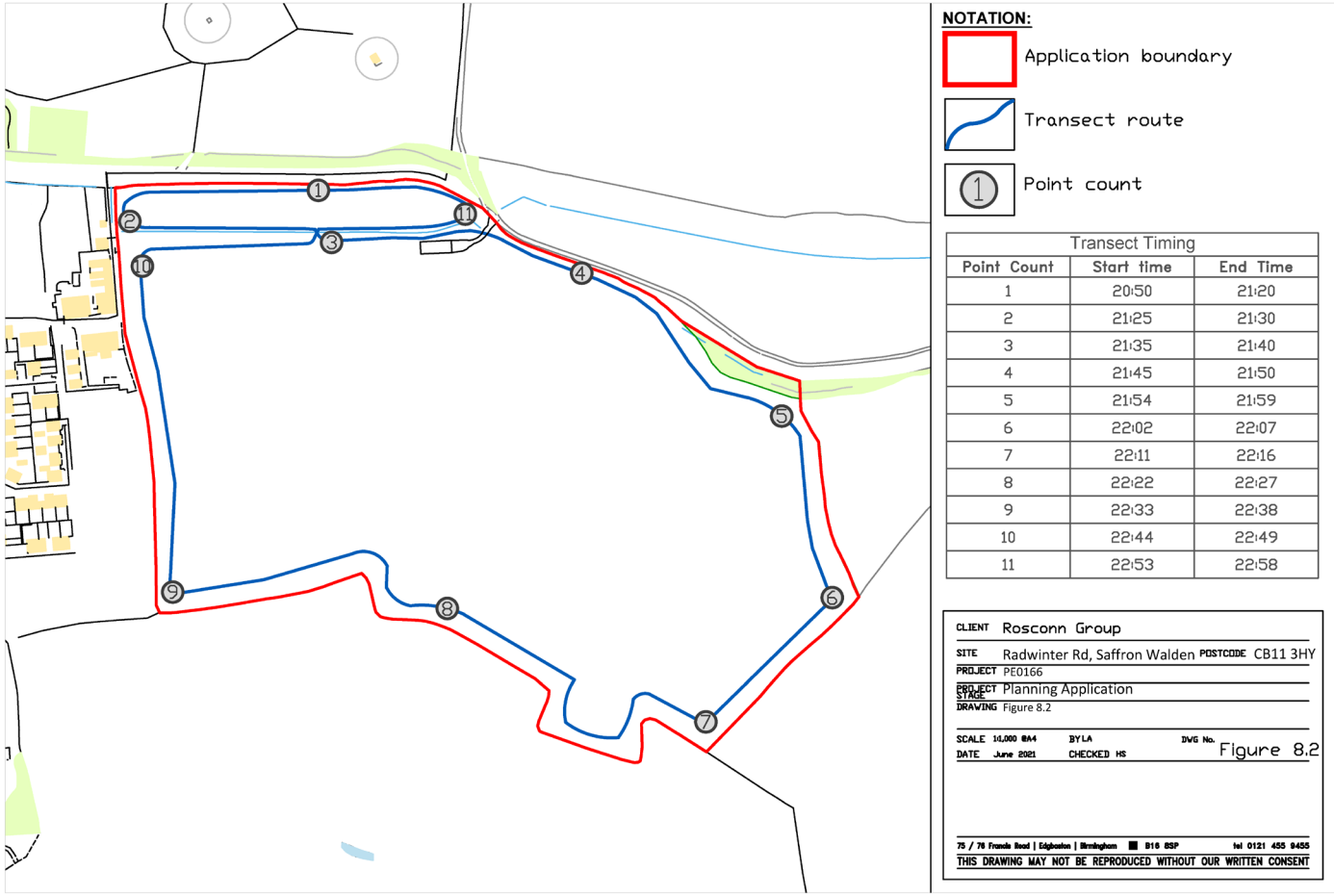


Figure 8.1: Bat Transact Map

providing good connectivity in the landscape, and the presence of varied habitat such as scrub, woodland, grassland in the vicinity. This assessment identified further surveys to determine the value of the Site for foraging/commuting bats.

Nocturnal Activity Survey

8.24 A dusk emergence bat survey was undertaken on an oak tree (T5) with high bat roost potential along the northern Site boundary, which followed methodologies contained within BCT guidelines. The surveyors were equipped with Echo Meter Touch recorders and positioned strategically around the trees to capture all possible access/egress points. At the time of writing this chapter, a further two bat surveys are planned in July 2021 and will be reported in a separate Addendum to this ES.

8.25 The survey was undertaken by licenced bat ecologist, Josh Randhawa (Bat Class Licence WML-A34-Level 1, 2021-52114-CLS-CLS) and assistant, Louis Andrews. Dusk commenced 15 minutes prior to sunset and ceased 90 minutes after sunset. Dawn surveys commenced at least 90 minutes before sunrise and ceased at sunrise. Details on the survey timings and weather conditions are given in **Table 8.1** below.

Table 8.1: Weather Conditions During Nocturnal Bat Activity Surveys

DATE	SUNSET (H)	START TIME (H)	END TIME (H)	AIR TEMPERATURE	WEATHER
25.05.2021	21:28	21:15	23:00	15oC	Clear, still, dry

Transect Survey

8.26 A bat transect survey per season was considered appropriate in accordance with methodologies contained within Collins, 2016. At the time of writing this chapter, the May 2021 bat transect survey had been completed with further surveys planned in July and September 2021, which will be reported under a separate Addendum to this ES. Surveys involved taking acoustic bat recordings across a pre-determined transect route (see **Figure 8.1**).

8.27 Surveys targeted habitat and features suitable for foraging/commuting bat activity, including the edges of woodland and hedgerows established along the Site boundaries.

8.28 The survey observed nocturnal bat activity at suitable points along the transect route and targeted the above interest features. The surveyor was equipped with an Echo Meter Touch recorder. The transect route was walked at a steady pace, during which time all visual and audible bat activity was recorded. The survey commenced prior to sunset and ceased approximately 90-120 minutes following sunset.

8.29 The date, timings and weather conditions during the survey are given in **Table 8.2** below and were considered optimal for capturing nocturnal bat activity.

Table 8.2: Date, Weather Conditions and Timing of Bat Transect Survey

DATE	SUNSET (H)	START TIME (H)	END TIME (H)	AIR TEMPERATURE	WEATHER
25.06.2020	21:05	20:50	23:00	12°C	Dry, still, 20% cloud

Badgers

8.30 A badger *Meles meles* survey was conducted in April 2021 of the Site, and where accessible, up to 30m from the Site boundary. In addition to the presence of active setts, the following signs of activity were also searched for: latrines, footprints, evidence of feeding activity and well-worn paths through vegetation. Badgers will use a number of setts throughout their territory at different times of the year; any large holes with the potential to be used by badger, but not showing any obvious signs of recent activity, were therefore also recorded. Full survey results are provided in a separate confidential appendix (**Appendix 8.4**).

Hazel Dormice

8.31 Habitats present on-site were assessed for their suitability to support hazel dormice *Muscardinus avellanarius*. They are typically found in deciduous woodland, species-rich hedgerows and scrub; with hazel, oak, bramble and honeysuckle being of particular importance to this species. Field signs were searched for by a licensed hazel dormouse ecologist to determine whether the habitats on-site were considered suitable for supporting this species.

8.32 In April 2021, 85 dormouse nest tubes were installed in hedgerows around the Site by Natural England licensed dormouse ecologist James Patternden. At the time of writing this chapter, dormouse tubes had been checked on 24th May 2021 and no signs of hazel dormouse recorded. Surveys will continue until October 2021 and full results reported in an Addendum to this ES.

Otter and Water Voles

8.33 An otter and water vole survey was undertaken in September 2020, following principles set out in RSPB (1994) and Chanin (2003). Where access to the watercourse was possible, a check for evidence of water vole *Arvicola amphibius* was carried out following the 'search for field signs' method set out in Dean et al. (2016). The most important diagnostic field sign for water voles is the presence of latrine sites. These are locations repeatedly used by water voles to deposit their droppings, often in prominent locations along the bank. Other field signs include the presence of burrows, feeding sites and footprints. Although these other signs provide indication of presence and are useful supporting evidence to latrines, they are of limited value on their own. Signs of otter presence include spraints on prominent locations e.g. boulders, culverts etc, prints, holts, lay-ups, couches etc.

White-Clawed Crayfish

8.34 A ditch was present within the Site. The ditch was appraised for its suitability to support white clawed crayfish *Austropotamobius pallipes* and any signs of activity seen recorded from bankside access.

Legally Controlled Species

8.35 Evidence of species listed on Schedule 9 of the Wildlife and Countryside Act (1981), as amended, were recorded as seen.

Other

Methods of Assessment

Nature Conservation Evaluation

8.36 This section evaluates the nature conservation importance of the Site in terms of its relative importance in a geographical context.

8.37 The nature conservation sites, habitats and species that have been identified as important ecological features have been evaluated based on the criteria given in **Table 8.3**. The

importance of the feature is defined with reference to the geographical context of the Site i.e. the specific importance of the Site to each of the habitats or species populations identified as being present within it or making use of it.

8.38 Individual ecological receptors (habitats and species that could be affected by the Proposed Development) were assigned levels of importance for nature conservation in one of the following categories:

- International;
- UK;
- National;
- County;
- District;
- Local; or
- Within the immediate zone of influence only which is considered to be Site level.

8.39 For a given receptor, determination of value includes consideration of the size, conservation status and quality of the species, population or habitat feature.

Valuation of Habitats

8.40 Some sites are automatically assigned a nature conservation value through designation. The reason for designation is taken into account in assessing potential impacts. Designated sites are considered at the following levels:

- International – SAC, SPA and Ramsar Sites;
- National – SSSI in England; and
- County or District – sites designated by Local Authorities or County Wildlife Trusts and others.

8.41 The reason for designation is taken into account in assessing potential impacts. Habitats that are not subject to specific nature conservation designations have been valued against habitats included in the Section 41 list (list of species and habitats of principal importance in England) as required under Section 41 of the Natural Environment and Rural Communities [NERC] Act, 2006.

8.42 In determining values of habitats, consideration has also been given to national and local Habitat Action Plans and the Ancient Woodland Inventory (AWI). This consideration has been given in conjunction with critical appraisal of the size, status and quality of the habitat affected.

Valuation of Species Populations

8.43 In ascribing values to populations of species, consideration has been given to the legal status of species, as well as their population size and conservation status on the Site and within the geographic area. Certain species receive protection under various pieces of legislation and this has been taken into account when determining value. Legislation considered includes:

- Wildlife and Countryside Act 1981 (as amended);
- The Protection of Badgers Act 1992;
- The Conservation of Habitats and Species Regulations 2017 (as amended);

- The NERC Act 2006; and
- The Countryside and Rights of Way (CRoW) Act 2000.

8.44 The rarity of the species in the context of status, i.e. whether populations of a species are declining either nationally or at a more local level has also been considered.

8.45 The presence of invasive alien species or injurious weeds is considered to represent an ecological dis-benefit.

Method of Impact Assessment

8.46 The assessment of ecological impacts has been undertaken following current best practice provided by the CIEEM, 2018.

8.47 This assessment identifies the potential effects of the Proposed Development on biodiversity within the Site boundary and wider Zone of Influence extending upto 10km from the Site depending on the type of impact and ecological feature under consideration. It determines the significance of the identified effects for the construction and operational phases.

8.48 Ecological features include nature conservation sites, habitats, species assemblages/ communities or populations or groups of species. The assessment of the significance of predicted impacts on ecological features is based on both the 'importance' of a feature and the nature and magnitude of the impact that the project will have on it. Impacts may be direct (e.g. the loss of species or habitats), or indirect (e.g. effects due to noise, dust or disturbance). The impact assessment process involves:

- Identifying and characterising impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts;
- Assessing the significance of any residual effects after mitigation;
- Identifying appropriate compensation measures to offset residual effects; and
- Identifying opportunities for ecological enhancement.

8.49 The assessment includes potential impacts (direct, indirect, secondary and cumulative) on each ecological feature determined as important from all phases of the project and describes in detail the impacts that are likely to be significant, making reference to the following characteristics as set out in CIEEM (2018):

- Positive or negative;
- Extent;
- Magnitude;
- Duration;
- Timing;
- Frequency; and
- Reversibility.

8.50 The key sources of impact to the nature conservation interests of the area resulting from the implementation of the Proposed Development may arise as direct and indirect effects, examples of which are given below:

Direct Effects:

- Direct mortality as a result of construction activity;
- Habitat loss (land-take), where the severity of impact is directly related to the amount of habitat lost and the conservation value of that habitat; and
- Habitat fragmentation (severance of habitats and/or wildlife corridors linking them). This can lead to reduced genetic diversity and increase the likelihood of species being lost.

Indirect Effects:

- Including disturbance (visual, noise or vibration), dust deposition, incidental vehicle trafficking, water discharges and surface runoff. These impacts may affect habitats both within and outside the footprint of the Proposed Development; and
- Impacts may be either temporary or permanent in nature. Temporary effects typically occur during the construction phase of a scheme. It should be appreciated that temporary impacts on habitats of high ecological value may have as great or greater impact as permanent loss of less valuable habitats.

8.51 The magnitudes of impacts are evaluated in terms of their predicted effect on the integrity of an ecological receptor, where integrity is defined as “The coherence of ecological structure and function that enables the feature to be maintained in its present condition.” (IEEM, 2006). Consideration is given to the nature and duration of the disturbance, its reversibility, timing and frequency, as well as any cumulative effects and the potential for impact avoidance or minimisation.

Defining Significance

8.52 After assessing the impacts of the proposal, all attempts should be made to avoid and mitigate ecological impacts. Once measures to avoid and mitigate ecological impacts have been finalised, assessment of the residual impacts are undertaken to determine the significance of their effects on ecological features (CIEEM, 2018).

8.53 For the purpose of EcIA, ‘significant effect’ is an effect that either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local (CIEEM, 2018).

8.54 Significant effects encompass impacts on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution). Significant effects are qualified with reference to a geographic scale; European, national, regional, county, district, local and site (CIEEM, 2018).

8.55 For the purposes of the EIA Regulations, effects at a district or above level are generally considered to be ‘significant’ under the Regulations, unless otherwise stated.

8.56 **Table 8.3** shows the factors that have been considered in the determination of significant effects on ecological features.

Table 8.3: Determining Ecologically Significant Effects

ECOLOGICAL FEATURE	CONSIDERATION
Designated sites	Will the project undermine the site's conservation objectives? Will the project positively or negatively affect the conservation status of habitats or species for which the site is designated? Will the project have positive or negative effects on the condition of the Site or its interest/qualifying features? Will the project remove or change any key characteristics? Will there be an effect on the nature, extent, structure and function of component habitats? Will there be an effect on the average population size and viability of component species? Will there be an impact on wider ecosystem functions and processes?
Habitats	Will the project positively or negatively affect the conservation status of the habitat? Will it affect its extent, structure and function as well as its distribution and its typical species within a given geographical area?
Species	Will the project positively or negatively affect the conservation status of the species? Will it affect its abundance and distribution within a given geographical area?

Cumulative Effects

8.57 A search of the LPA online planning portal was checked for any relevant plans or projects with the potential to act in-combination with the Proposed Development which could increase the impact on the Site's biodiversity. This included consideration of those development commitments already screened as part of the project's Cumulative Impact Assessment, as outlined in more detail in Chapter 14 of the ES.

Assessment Limitations and Assumptions

8.58 The assessment for designated sites is based on site citations provided by the local biological record holder and no visits have been made to designated sites.

8.59 Ecological surveys are limited by factors that affect the presence of plants and animals, such as the time of year, weather, migration patterns and behaviour. The initial survey was undertaken in September, which is towards the end of the growing season, it was still possible to characterise the habitats present and this assessment was updated during subsequent Site visits in May and June and, therefore, not considered to be a significant limitation.

8.60 The Phase 1 Habitat Survey aimed to characterise the habitat on-site and is not intended to give a complete list of plant species present. All surveys capture a snap shot of data recorded on the day.

8.61 Any absence of desk study records cannot be relied upon to infer absence of a species/habitat, as the absence of records may be a result of under-recording within the given search area.

8.62 Some areas of vegetation adjacent to the Site were dense bramble, hindering full access during the badger survey. It was considered that sufficient access was possible to characterise the Site's value to badgers.

8.63 Due to dense vegetation, some areas of the ditch bankside were not fully visible or accessible for water vole and otter survey. Access was sufficient to characterise the likely value of the watercourse for riparian mammals and white-clawed crayfish. It was considered that sufficient access was possible to characterise the Site's value to water voles, otters and white-clawed crayfish.

8.64 Access to trees was limited particularly along Radwinter Road making assessment of bat roost potential limited in some places. It was considered that sufficient access was possible to characterise the Site's value to bats.

Existing Baseline Conditions

Baseline data

Internationally Designated Sites for Nature Conservation

8.65 No internationally designated sites for nature conservation were identified within 10km of the Site.

Nationally Designated Sites for Nature Conservation Designation

8.66 No nationally designated sites for nature conservation were recorded within 2km of the Site.

Non-Statutorily Designated Sites for Nature Conservation Designation

8.67 Ten non-statutorily designated sites were identified within 2km of the Site (**Table 8.4**). None were recorded on-site. The closest site identified is Pounce Wood LWS located c. 180m north, separated by Radwinter Road.

Table 8.4: Non-Statutorily Designated Sites Identified within 2km of the Site

NAME OF SITE	APPROX. DISTANCE AND DIRECTION FROM THE SITE	BRIEF DESCRIPTION
Pounce Wood	180m north	This large ancient wood has been almost entirely replanted with beech *Fagus sylvatica*, spruce *Picea* sp. and other conifers. Supports marshy grassland flora, including wood sedge *Carex sylvatica* and remote sedge *Carex remota.*
Ashdon Road Verges	500m north	Verges supporting chalk grassland flora.
Martin's Wood	650m north-east	Ancient woodland dominated by conifers. Native broadleaved species are largely restricted to the boundary banks. Supports interesting ground flora and marshy grassland habitat.
Whitehill Wood	700m north	Ancient woodland although most of the wood has been replaced by conifers. Supports the nationally scare wood barley *Hordelymus europaeus.*
Saffron Walden - Ashdon Road Protected Roadside Verge	700m north	Verges supporting chalk grassland flora.
Robin's Grove/Hills Wood	1km north-east	Two ancient woodlands restocked with conifers. Native species are varied but sparse.

NAME OF SITE	APPROX. DISTANCE AND DIRECTION FROM THE SITE	BRIEF DESCRIPTION
Mollpond Wood	1km north	Ancient wood comprises tree-sized coppiced hornbeam *Carpinus betulus* and pedunculate oak *Quercus robur* standards. The ground flora has an unusual abundance of sedges.
Redgates & Noakes Grove	1.15km north-east	Flower-rich chalky grassland with scrub. The main species of interest is the large population of Wild Liquorice *Astragalus glycyphyllos.*
Redgates Lane	1.4km north-east	Road verge, hedge and immediate inner field margin. Supports nationally scare crested cow-wheat *Melampyrum cristatum*.
Wimbish Lanes	1.7km south-east	This network of ancient green lanes provides linear woodland and grassland habitats which attract a wide range of wildlife, notably butterflies, and acts as a valuable wildlife corridor system in a largely arable landscape.

8.68 These sites are considered to be of importance to nature conservation up to a district to county level.

Priority Habitat

8.69 There are two priority habitats within 2km of the Site boundary: traditional orchard and deciduous woodland. The traditional orchard is c. 0.34ha in extent and located c. 550m west of the Site. The areas of deciduous woodland include Ancient Semi-Natural Woodlands (ASNW) and Ancient Replanted Woodland (ARW). The Pounce Wood (ARW) is located c. 180m north of the Site and Whitehill Wood (ARW) located c. 700m north of the Site. Martins Wood (ASNW) is located c. 650m north-east of the Site. These sites are considered to be of importance to nature conservation up to a district to county level.

Habitats on Site

8.70 The habitats described below are mapped in **Figure 8.2** with Target Notes (TN) and Site photographs provided in **Appendix 8.2**.

Arable

8.71 The majority of the Site consists of an arable field dominated by bare ground at the time of survey with areas of tall ruderal habitat in the field margin (c. 1m wide). Species recorded include perennial ryegrass *Lolium perenne,* yarrow *Achillea millefolium*, broad-leaved dock *Rumex obtusifolius*, spear thistle C*irsium vulgare*, common nettle *Urtica dioica* and creeping thistle *Cirsium arvense*.

8.72 This habitat is considered species poor and widespread both locally and nationally and is not considered to be of value to nature conservation at greater than a Site level.

Semi-Improved Grassland

8.73 The smaller field was dominated by grasses which appeared to have been sown in the past with perennial ryegrass *Lolium perenne*. Species recorded include, fescue *Festuca sp.*, cock's-foot *Dactylis glomerata*, yarrow *Achillea millefolium*, broad-leaved dock *Rumex obtusifolius*, broadleaved plantain *Plantago major*, false oat-grass *Arrhenatherum elatius*, white clover

Trifolium repens, meadow foxtail *Alopecurus pratensis*, common nettle *Urtica dioica*, cow parsley *Anthriscus sylvestris* and cowslip *Primula veris.*

8.74 This habitat is considered to be widespread both locally and nationally and is not considered to be of value to nature conservation at greater than a Site level.

Hedgerows and Scattered Trees

8.75 The field boundaries are dominated by species-rich hedgerows with scattered mature and semi-mature trees (**Table 8.5**). It is outside the scope of this assessment to value to hedgerows under the archaeology section of the Hedgerow Regulations 1997.

Table 8.5: Summary of Hedgerows on Site (see Figure 8.2 for Locations)

HEDGEROW NUMBER	OBSERVATIONS	SPECIES RECORDED	POSSIBLE SPECIES-RICH UNDER HEDGEROW REGULATIONS 1997?
H1	c. 4m tall.	Blackthorn hazel, field maple, horse chestnut, dog rose, elder, hawthorn.	YES
H2	Hedgerow in double row.	Blackthorn hazel, field maple, horse chestnut, dog rose, elder, hawthorn, apple.	YES
H3	Hedgerow in double row.	Blackthorn hazel, field maple, horse chestnut, dog rose, elder, hawthorn, apple.	YES
H4	Hedgerow in part double row.	Blackthorn hazel, field maple, ash, dog rose, oak.	Possible
H5	Hedgerow in single row. Dry ditch. Dead tree with moderate bat roost potential (TN3).	Blackthorn hazel, field maple, horse chestnut, dog rose, elder, hawthorn, apple.	YES
H6	Hedgerow in single row becomes double at the end. Dry ditch. Dead tree with moderate bat roost potential (TN3).	Blackthorn hazel, field maple, horse chestnut, dog rose, elder, hawthorn, apple.	YES
H7	Hedgerow in double row but adjacent to property. Dry ditch.	Blackthorn hazel, field maple, horse chestnut, dog rose, elder, hawthorn, yew, holly. Leylandii.	No – curtilage of a property
H8	c. 4m tall.	Blackthorn hazel, field maple, horse chestnut, dog rose, elder, hawthorn.	YES
H9	c. 4m tall.	Blackthorn hazel, field maple, horse chestnut, dog rose, elder, hawthorn.	YES

8.76 The hedgerows frequently support a range of broad-leaved trees ranging in age from immature to mature. Species include; oak Quercus sp., ash *Fraxinus excelsior*, field maple *Acer campestre*, sycamore *Acer pseudoplatanus*, horse chestnut *Aesculus hippocastanum* and goat willow *Salix caprea*.

8.77 Hedgerows and scattered trees are considered to be of importance up to a local level, primarily due to the species diversity and habitat connectivity they provide.

Watercourse

8.78 A ditch was present on Site which was partially dry at the time of survey. The ditch, c. 0.5m wide with vegetated bank sides, heavily shaded by dominated mature trees and hedgerow. The ditch appeared to be formed from a muddy substrate lacking frequent boulders and stones. The ditch is culverted under the access road. The ditch was dry in places and water did not have any visible flow.

8.79 It is considered likely to have been man-made or influenced and non 'near natural' as required by River and Stream Priority Habitats. It is considered to be of Site level importance to nature conservation.

Buildings

8.80 One building was present on-site; an agricultural shed constructed from metal panelling. The structure was considered to be of negligible value to nature conservation.

Species

Amphibians

8.81 No records of great crested newts within 2km of the Site were provided by EWTBRC.

8.82 One pond was identified within 250m of the Site located c. 170m to the south of the Site. Upon inspection, the pond was largely dry and filled with terrestrial plant species (see **Appendix 8.3** for HSI calculations) and was considered to offer poor suitability for great crested newts. Based on the lack of suitable breeding habitat identified within 250m of the Site, great-crested newts are not considered likely to be a receptor with respect to the Proposed Development of the Site and are scoped out of this assessment.

Reptiles

8.83 No records of reptiles within 2km of the Site were provided by EWTBRC.

8.84 The habitats on-site are considered to be suboptimal for supporting populations of reptiles due to the dominance of arable habitat. The Site is connected to wider environs for reptiles through hedgerows and the ditch appears to frequently lack water, but these habitats are considered to offer suboptimal habitat for reptiles. It cannot be entirely ruled out that reptile species may be a receptor in respect of the Proposed Development and a precautionary approach is recommended and, therefore, reptiles have been scoped into this assessment.

Birds

8.85 Multiple records of bird species within 2km of the Site were provide by EWTBRC.

8.86 The habitats on-site are likely to provide suitable foraging and nesting habitat for a range of

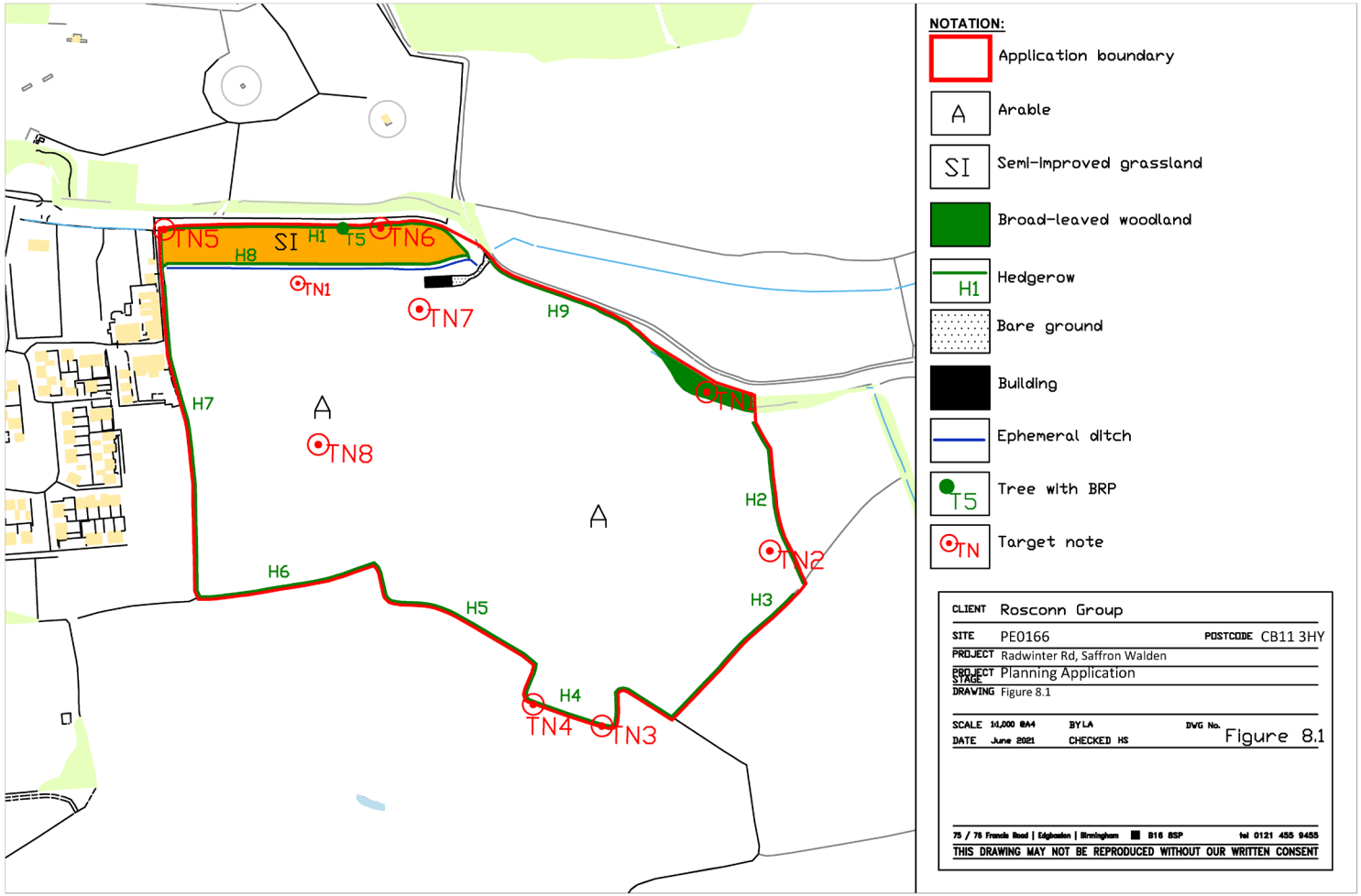


Figure 8.2: Phase 1 Habitat Map

urban and agricultural bird species, particularly associated with the hedgerows and mature trees and arable habitat. Foraging and nesting birds could be a potential receptor with respect to the Proposed Development.

8.87 Based on the limited size of the Site and context of similar habitat immediately in the local landscape, the Site is considered to be of importance to foraging and nesting birds at a Site level.

Bats

8.88 Bat species reported within 2km of the Site included common pipistrelle *Pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctule*, serotine *Eptesicus serotinus* and brown long eared *Plecotus auratus* bat.

8.89 The trees to be affected by the Proposed Development were based on the British Standard Tree report (B. J. Unwin Forestry Consultancy 2021). All trees to be affected by the proposed access were assessed by a licenced bat ecologist. Tree T5 (**Figure 8.2**) is a large veteran oak (*Quercus* sp.) and has the following Potential Roosting Features (PRF) as shown in photographs in **Appendix 8.2**:

- A - Tear out, E aspect, 4m. Cavity appears to extend into branch and may be currently used by squirrels - Moderate;
- B - 2 x Tear out, S aspect, 3m. Tear outs with possible cavities present - Moderate;
- C - Splits and lifted bark associated with south facing branch at 10m - Moderate;
- D - Ivy cover to 13m with thick matted stems that provide suitable crevices for roosting during the summer period - Moderate; and
- E - Potential (likely) hidden features not able to be viewed from ground level due to foliage of Ivy and height and maturity of tree - High.

8.90 All other trees anticipated to be affected were considered to have low or negligible value for roosting bats. Several trees to be retained were assessed as having bat roost potential as shown on **Figure 8.2** (TN3; TN4 and TN5) on the southern Site boundary.

8.91 T5 was subject to a dusk emergence survey and a bat was observed potentially emerging from T5 at 21:45 h on 25th May 2021, and commute southwards. The bat emerged silently but was considered to be a brown long-eared bat. A further two bat surveys are planned and full results will be provided as an Addendum to this ES to validate the current assessment findings. For the purpose of this assessment, T5 is considered to support a bat roost.

8.92 The hedgerow habitat corridors on-site are considered suitable for foraging/commuting bat species. The May 2021 bat transect survey recorded foraging and commuting bat activity throughout the survey, mainly associated with the boundary vegetation. Common pipistrelles were recorded most frequently with the majority of foraging activity recorded in proximity to the belt of woodland along the northern Site boundary. Four passes from barbastelle bats *Barbastella barbastellus* were recorded along the southern and western Site boundaries and one pass from a brown long-eared bat was recorded. Further surveys are on-going and data will be provided as an Addendum to this ES.

8.93 Foraging and roosting bats could be a potential receptor with respect to the Proposed Development. Based on the survey data collected to date, it is anticipated that the Site is likely to be of Site to local value to foraging/commuting bat species and Site-local value for roosting bats based on data collected to date.

Badger

8.94 Information pertaining to badgers is provided under confidential **Appendix 8.4**.

Hazel Dormice

8.95 No records of hazel dormice within 2km of the Site were provided by EWTBRC.

8.96 The hedgerows on-site were considered in places to provide the required structural diversity to support hazel dormice. No records of this species are known in the area, however, due to potentially suitable habitat it cannot be entirely ruled out this species is a potential receptor with respect to the Proposed Development.

8.97 Surveys are ongoing to determine presence/absence of hazel dormice. At the time of writing this chapter, no hazel dormice had been recorded in the May 2021 survey visit. Further surveys are planned until October 2021. It is anticipated that, based on the habitat connectivity the hedgerows on-site provide, that should hazel dormice be present the Site habitats would be of local value for this species. Taking a precautionary approach, this assessment assumes the presence of hazel dormice.

Otter and Water Vole

8.98 No records of water vole or otter within 2km of the Site were provide by EWTBRC.

8.99 The watercourse, c. 0.5m wide with vegetated bank sides, heavily shaded by dominated by mature trees and hedgerow. The ditch appeared to be formed from a muddy substrate lacking frequent boulders and stones. The ditch is culverted under the access road. The ditch was dry in places and water did not have any visible flow.

8.100 No signs of water vole or otter activity was recorded during the survey. The ditch is considered suboptimal for both species due to lack of foraging habitat for water vole and shelter for otters. Taken together with the lack of records in the area, it is considered unlikely that otter and water vole are receptors with respect to the Proposed Development. Given these species are highly mobile and conditions of the ditch may alter to support water, a precautionary approach has been adopted, therefore, water vole and otter have been scoped into the assessment.

White-Clawed Crayfish

8.101 No records of white-clawed crayfish within 2km of the Site were provide by EWTBRC.

8.102 The ditch lacked water in many areas and was formed from a muddy substrate lacking frequent boulders and stones. Taken together with the lack of records for this species in the area, it is considered unlikely that white-clawed crayfish is a receptor with respect to the Proposed Development.

Other Notable Species

8.103 Hedgehogs have been recorded within 2km of the Site. The habitats on the Site are suitable for supporting this species and hedgehogs are considered a potential receptor with respect to future development.

8.104 The Site has the potential to support brown hare *Lepus europeaus.* Brown hares rest and rear young in depressions in arable fields; habitat of this kind is present across the Site. The Site is predominantly arable fields and field margins and hedgerows may also provide cover, particularly in winter months. No specific survey for brown hare was undertaken during this assessment and no incidental sightings were made. Given the availability of suitable arable

habitat in the wider landscape, the Application Site represents only a small fraction and is considered to be of importance to brown hare at a Site level only.

8.105 The habitats on-site were assessed for their potential to support diverse populations of important and protected terrestrial invertebrates. The habitats on-site are common and widespread both in the wider landscape and across the UK. Habitats typically considered of high value to invertebrates including deadwood, wetland and significant expanses of brownfield are not present on-site. As such, the Site is considered to support a range of common invertebrate species only and is not considered to be of importance to invertebrates at more than a Site level.

Invasive Non-native Species.

8.106 No invasive species were identified on-site at the time of survey and further assessment has been scoped out.

Evolution of the Baseline Conditions Without Development

8.107 As required by Schedule 4 of the 2017 EIA Regulations, the ES must contain an outline of the likely evolution of the baseline conditions without implementation of the development and to be *"As far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge."*

8.108 The Site is an arable field and a grassland field surrounded by hedgerows under agricultural management. The evolution of baseline conditions is likely to be a continuation of this management and is not anticipated to benefit from habitat improvements that would be implemented via development, including net biodiversity gain, from positive habitat management and planting.

Predicted Impacts

Protected Sites

8.109 No internationally or nationally designated sites for nature conservation were identified within 10km or 2km of the Site respectively. No impacts direct or indirect to internationally or nationally designated sites for nature conservation are anticipated to occur.

8.110 The Proposed Development will introduce new residents into the local area. Pounce Wood LWS is located c.180m to the north of the Site and is in private ownership with no public or permitted rights of access. On this basis, no recreational impacts to Pounce Wood LWS are anticipated and this has been scoped out of further assessment.

Embedded Mitigation

8.111 The ecological components of the scheme are an important integral part of the proposals and any necessary mitigation measures have been designed into the Proposed Development as embedded (inherent) mitigation. Where additional mitigation is required it has been identified separately below. Embedded mitigation is predicted to have a positive direct impact over the short to long-term. The semi-natural greenspace, attenuation area and Public Open Space (POS) for the Site proposes a series of linked multi-functional spaces that will deliver landscape, amenity and biodiversity benefits as well as perform SuDS functions, responding to flood risk, pollution control and climate change issues.

8.112 Whilst this application is in outline with landscape detail reserved, green spaces of the Site can

be seeded with locally appropriate seed mixes and managed for biodiversity enhancement. Hedgerows will largely be retained except for access and will be reinforced and new native tree planting will be implemented around Site boundaries, within hedgerows to provide a robust landscape structure and extend and link the existing habitat network. An initial DEFRA V2 Biodiversity Metric has been undertaken showing that based on the Parameter Plans submitted, Biodiversity Net Gain could be achieved subject to an appropriate final landscape planting scheme (**Appendix 8.5**). The Biodiversity Metric would need to be finalised at the reserved matters stage.

8.113 At reserved matters application stage, detailed planting and management plans will be prepared in response to suitably worded outline planning conditions, that will set out how the above embedded strategy will be delivered.

Habitats

8.114 Based on the assessment parameter plans, it is anticipated that the Proposed Development will have the following ecological impacts. Impacts to badgers are provided under a separate confidential report (**Appendix 8.4**), the assessment of effects are discussed in the following sections:

- Permanent loss of sections of species-rich hedgerow;
- Permanent loss of arable field;
- Permanent loss of semi-improved grassland;
- Creation of grassland for a variety of uses including semi-natural greenspace and public open space with wildlife-friendly mix and management regime to attain best possible condition;
- Enhancement of existing hedgerows and planting additional trees;
- Creation of mixed scrub habitat;
- Retention of existing hedgerows (except for access);
- Creation of standing water habitats via the attenuation SuDS scheme;
- Potential for disturbance to reptiles, if present during construction with long-term enhancement of reptile habitat;
- Potential for disturbance to hazel dormice, if present during construction, with long-term enhancement of hazel dormice habitat;
- Potential for disturbance and loss of nesting and foraging habitat during construction with long-term enhancement of habitat for a range of urban and farmland bird species. Permanent loss of habitat for arable habitat dependent bird species such as skylark;
- Potential for disturbance to otters and water voles, if present during construction, with long term enhancement of habitat via the SuDS scheme;
- Potential disturbance to a brown-long eared bat roost in T5 via hedgerow removal/lighting;
- Enhancement of bat foraging/commuting habitat and roosting bat habitat;
- Potential for disturbance to hedgehogs, if present during construction, with long-term enhancement of hedgehog habitat;
- Permanent loss of potential brown hare habitat; and
- Potential enhancement of terrestrial invertebrate habitat.

Evaluation of Predicted Impacts.

Protected Sites

8.115 Without appropriate pollution prevention measures, there is a low risk that construction could indirectly affect nearby habitats including LWSs, therefore, any pollution events are not likely to be significant above Site level. As the nature and pathway of any such pollution event is hard to predict, confidence in this assessment is low.

Habitats

Arable Fields and Margins

8.116 Permanent loss of arable land and field margins will be required. Arable field margins are not considered to qualify as Priority Habitats due to the lack of width and management. Arable land and field margins are common in the landscape. Based on the availability of similar habitat in the landscape and low ecological value, permanent loss of an arable field is considered to be significant at a Site level only.

Semi-Improved Grassland

8.117 Permanent loss of semi-improved grassland will be required. The Proposed Development will create an attenuation area and semi-natural green space which, with the embedded mitigation as shown on the illustrative layout, is anticipated to enhance the biodiversity of the grassland habitats with an appropriate final species selection and management regime that is considered to be of significance at a Site level.

Species-Rich Hedgerows and Scattered Trees

8.118 Permanent loss of c. 105m of hedgerow H4 and c. 25m of hedgerow H3 (B. J Unwin Forestry Consultancy, 2021) will be required for access. These hedgerows correspond to H1 and H8 on the Phase 1 Habitat Map (**Figure 8.2**) and based on an initial survey were considered to be potentially species-rich and 'important' under the Hedgerow Regulations. Hedgerows on-site are considered to qualify as Priority Habitat. Taking a precautionary approach based on the limited sections of permanent hedgerow removal required, taken together with the embedded hedgerow mitigation which retained hedgerow habitat connectivity, it is considered that the permanent loss of small sections of species-rich hedgerow (should an appropriate native species-rich mix not be implemented) could be negative (adverse), permanent and significant at a Site level.

8.119 Without appropriate further mitigation there is potential for indirect, negative and permanent impacts on retained species-rich hedgerows through soil compaction, accidental damage during construction which could be of significance at a Site level.

8.120 Based on the current Proposed Scheme, all trees are anticipated to be retained with additional native tree planting. Without appropriate mitigation there is potential for indirect, negative and permanent impacts on retained trees through soil compaction and accidental damage during construction which could be of significance at a Site level.

Watercourse

8.121 Based on the Proposed Development the existing ditch (watercourse) will be retained and no direct permanent impacts are proposed. The ditch did not hold water in many sections and lacked visible aquatic plants. It is not considered to qualify as a Priority Habitat. Without mitigation there is potential for direct impacts during construction such as pollution events or direct temporary impacts such as accidental incursions during construction. Any such impacts are considered to be temporary and reversible and of significance at a Site level.

8.122 The Proposed Development includes the creation of four new attenuation ponds located across the Site. The Proposed Development is considered likely to result in a direct positive and permanent enhancement of standing water habitat. Therefore, the Proposed Development will result in a net minor positive impact of significance at a Site level in terms of standing water habitat.

Building

8.123 Loss of a modern agricultural barn is considered to be of negligible impact to nature conservation. Impacts to protected species are considered below.

Reptiles

8.124 Native reptiles are protected against intentional killing and injuring under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). They are also all listed on Section 41 of the NERC Act.

8.125 Reptiles may be present at the time of construction. Based on the limited extent of suitable reptile habitat within the Site, the limited extent of the Site in the absence of mitigation construction impacts to reptiles (if present at the time of works) could be negative (adverse), permanent and significant up to a Local level.

8.126 There is also a likely minor beneficial impact to reptiles at a Site level (should a population be present) based on the embedded mitigation of creation of attenuation areas and enhancing habitat mosaic around the Site which populations of reptiles could benefit from over the medium to long term and significant at a Local level. Confidence in the assessment is low.

Birds

8.127 All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended) against destruction of the nest during the bird nesting season, which falls between March and August (inclusive). Bird species listed on Schedule 1 of the Act are afforded special protection against disturbance while at the nest or breeding site. Numerous bird species are listed on Section 41 of the NERC Act where they are in conservation decline.

8.128 During construction nesting (breeding) birds could be impacted by direct mortality and/or injury during construction if present at the time of vegetation removal or building demolition which without mitigation could negatively affect local populations of bird species. Based on the limited vegetation removal proposed, without mitigation it is not anticipated that this impact would be significant at greater than a Local level.

8.129 The Proposed Development will result in the permanent loss of agricultural habitats, permanent loss of sections of hedgerow for access, and temporary loss of semi-improved grassland all of which provide some foraging/nesting habitat for a range of agricultural bird species.

8.130 Embedded mitigation includes creation of grassland and strengthening hedgerow planting and additional tree planting and four new attenuation basins providing standing water habitat. Generalist species such as house sparrow and dunnock are likely to be positively impacted from increased nesting habitats (residential buildings and nest boxes) and food availability (garden bird feeders) which could result in a permanent positive impact for bird assemblages significant at a Local level.

8.131 Whilst loss of an arable field and field margins is likely to have a negative, permanent and irreversible impact on bird species which rely on arable crop rotation such as skylark, based on

the small extent of the arable field present, the availability of arable habitat in close proximity and in the wider landscape, any such displacement is not considered to be significant at greater than a Local level. Based on data gathered to date, confidence on the bird assemblage to be affected is low.

Bats

8.132 All bats are European Protected Species. All species of bat are protected under the Conservation of Habitats and Species Regulations 2017 (as amended), and the Wildlife and Countryside Act 1981 (as amended), which provides protection to certain animals included in Schedule 5 of the Act. Under the Act (as amended) in summary it is an offence to intentionally or recklessly kill, injure, capture or disturb bats or to damage, destroy or obstruct access to any place used by bats for shelter or protection. This is irrespective of whether the animals are present.

8.133 The existing building will require demolition and was considered to have negligible bat roost potential. Without further mitigation bats could be impacted by direct mortality, injury or disturbance during construction, if present at the time of works which would be negative and potentially significant at a Site level.

8.134 Under current proposals, T5 should be retained but based on current survey results it supports a brown long-eared bat roost (one bat seen emerging in May 2021). The hedgerow which connects to the tree and roost would also be partially lost with an c. 100m section removed for access. Without mitigation and based on the current status of the roost within this tree and species present, it is anticipated that loss of a section of hedgerow could result in a negative impact to a low conservation status bat roost significant up to a Local level. Based on the lack of a complete data set, confidence in this assessment is low.

8.135 The majority of the hedgerows will be retained and enhanced through additional planting embedded into the design and new standing water features, anticipated to be beneficial for foraging bats, the Proposed Development could positively and permanently enhance bat foraging and commuting habitat at a Local level over the long-term.

8.136 New street lighting and temporary construction lighting may pose a minor negative impact upon bats currently known to be using the Site hedgerow network for foraging and navigation. There is potential for the Proposed Development to have a permanent negative impact if an inappropriate lighting scheme is implemented which, based on survey data gathered to date is considered to be significant at up to a Local level. Confidence level of this assessment is low due to incomplete survey data at present.

Badger

8.137 Information pertaining to badgers is provided under confidential **Appendix 8.4.**

Hazel Dormouse

8.138 Hazel dormice are a European Protected Species and protected under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act, 1981 (as amended). This species is also listed as a species of principal importance under Section 41 of the NERC Act 2006. In summary, it is an offence to deliberately capture, injure or kill hazel dormice, damage or destroy a dormouse resting place or breeding site, deliberately or recklessly disturb a hazel dormouse while it's in a structure or place of shelter or protection,

block access to structures or places of shelter or protection, possess, sell, control or transport live or dead hazel dormice, or parts of hazel dormice.

8.139 Without mitigation, hazel dormice could be impacted through direct mortality, injury or disturbance during construction, if present at the time of works, which would be negative, permanent and potentially significant at a Local level. Confidence level of this assessment is low due to incomplete survey data at present.

8.140 During operation, hazel dormice could be affected by disturbance and predation if present. Dormice can persist in urban areas but are prone to being caught by domestic cats (Woods et al. 2003). The effects of this are uncertain and depend on whether the extent of habitat creation and management are sufficient to create a robust hazel dormice population. The Proposed Development includes new supplementary planting around existing hedgerows which could minimise these impacts over time.

8.141 The limited section of hedgerow to be removed, with the embedded hedgerow enhancement retaining habitat connectivity, means the Proposed Development is considered likely to deliver a net enhancement of dormouse habitat considered to be potentially significant at a Site level with potential for up to Local level effects, if suitable hedgerow species mixes and planting densities are achieved. Confidence level of this assessment is low due to incomplete survey data at present.

Otter and Water Vole

8.142 Water vole and their habitat are protected under the Wildlife and Countryside Act 1981 (as amended), which makes it, in summary, an offence to intentionally kill, injure or take (capture) a water vole and intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection or disturb water voles while they are using such a place. This species is also listed as a species of principal importance under Section 41 of the NERC Act 2006.

8.143 Otters are a European Protected Species and are protected under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended). This species is also listed as a species of principal importance under Section 41 of the NERC Act 2006. In summary, it is an offence to capture, kill, disturb or injure otters (on purpose or by not taking enough care), damage or destroy a breeding or resting place (deliberately or by not taking enough care), obstruct access to their resting or sheltering places (deliberately or by not taking enough care), possess, sell, control or transport live or dead otters, or parts of otters.

8.144 The surveys did not identify any presence of otter or water vole along the drainage ditch within the Site, but these areas could be used for foraging and commuting otters/water voles if they become established on a wider network over time and should they be present at the time of construction works. Based on the low suitability of the ditches for supporting these species, the predicted impact without further mitigation is considered to be potentially significant at up to a Site level.

8.145 The Proposed Development requires a SuDS scheme including attenuation basins which could be a positive and permanent enhancement for otter and water voles and significant at up to a Site level.

Hedgehog, Brown Hare and Terrestrial Invertebrates

8.146 During construction there is a risk of injury to individual hedgehogs during Site preparation and construction due to vegetation clearance, deep excavations and heavy machinery activity. Without mitigation, impacts are considered to potentially be of significance at a Site level for hedgehogs. The Proposed Development will retain the majority of habitats used by hedgehog (hedgerows) and enhance the habitat through creation of native shrub planting, wildflower planting and attenuation areas for drinking which could be positive and permanent enhancement at a Site level.

8.147 The Proposed Development will require the loss of an arable field and field margins which could be used by brown hare. No brown hare have been sighted through incidental sightings. Based on the availability of similar habitat in the immediate landscape and the lack of sightings, loss of an arable field is not considered to be of significant to brown hare above a Site level.

8.148 The Site is currently considered to provide low general habitat diversity to support a wide range of terrestrial invertebrates due to the dominance of arable habitat management. The Proposed Development has been designed to enhance the botanical diversity of the existing habitats through creation of species rich grassland and creation of four attenuation basins, all of which have the potential to enhance the Site for a variety of terrestrial invertebrates which could be of significance up to a Site level depending on the final planting design.

Mitigation

8.149 This section presents mitigation necessary to reduce any significant impacts identified. The mitigation is additional to the embedded mitigation but is considered necessary to prevent significant effects on the ecological features.

Protected Sites

8.150 During construction, potential minor negative indirect impacts have been identified due to sediment mobilisation/pollution events. Mitigation should include production of a Pollution Prevention Strategy to be included within the CEMP, prior to works commencing, agreed with the LPA, which can be secured by an appropriately worded planning condition.

Habitats

8.151 At the reserved matters stage, the principles set out within the assessment parameter plans and Draft Biodiversity Metric (**Appendix 8.5**) to deliver measurable ecological enhancement, should be implemented through a detailed landscape strategy and LEMP. These principles are:

- Creation of species-rich (seven or more native species) hedgerows of greater length than being lost to accommodate access;
- Creation of species-rich grassland under an appropriate management regime to maintain its value over the long-term, as set out in a detailed landscape strategy and LEMP;
- Planting native trees and shrubs and hedgerow to enhance habitat connectivity and diversity;
- Creation of SuDS features designed to enhance the biodiversity value of the Site; and
- Locations and nature of positive species-specific enhancements e.g. bat/bird boxes, reptile refugia and insect boxes.

8.152 All trees and hedgerows to be retained should have adequate Root Protection Areas (RPAs) in line with BS 5837:2012 Trees in Relation to Design, Demolition and Construction.

8.153 These mitigation measures should be agreed with the LPA and secured via planning condition.

Reptiles

8.154 The risk of killing or injuring reptiles (should they be present at the time of works) will be mitigated through a Reasonable Avoidance Method Statement (RAMS) to be included within the CEMP and to be agreed with the LPA when timing of works are known. With this mitigation in place, there should be no significant effect on reptile populations on the Site, should they be present at the time of works, during construction.

8.155 The LEMP should set out measures to enhance the Site for the benefit of reptiles including appropriate habitat creation and construction of a hibernaculum.

Birds

8.156 The following mitigation measures over the embedded mitigation measures are necessary to ensure the Proposed Development does not have a negative impact upon the wider avian ecological interests of the area, and should be agreed through the LEMP, details of which can be secured through a suitably worded planning condition:

- Include nectar and fruit bearing bushes and trees in any planting areas to enhance foraging habitats for birds controlled through a LEMP;
- Select appropriate native flowers and grassland species mixes which would benefit birds;
- Incorporating appropriate bird boxes into the residential building designs and/or retained trees controlled through a LEMP; and
- Design of SuDS features for the benefit of birds through appropriate native planting and variable water depths.

8.157 During construction, in order to safeguard nesting birds, where possible, vegetation removal and building demolition will be undertaken outside of the bird breeding season (March - August inclusive). Should any clearance works be required outside of this period, the area will be subject to a nesting bird check by a suitably qualified ecologist, no more than 72 hours prior to clearance. Should any nesting behaviour be identified, the area will be fenced off and no clearance will take place until the young have fledged.

Bats

8.158 Prior to the reserved matters stage, the bat transect surveys should be completed to confirm the status of the bat roost in T5 and, if required, a European Protected Species Licence should be obtained if loss of the hedgerow is likely to affect the roost.

8.159 Mitigation should be agreed with Natural England once survey data has been obtained but based on survey data to date, it is anticipated that a suitable bat box could be installed on a mature retained tree on the southern boundary. This should be secured via planning condition before any works affecting hedgerow associated with T5 are undertaken.

8.160 Prior to felling any tree and the building on Site, should more than one year have passed since the assessment of bat roosting potential have been undertaken, they should be re-assessed by an experienced bat ecologist prior to works affecting them commencing. If a bat is found or suspected at any point works affecting that feature should cease immediately and an experienced bat ecologist contacted to determine appropriate mitigation. This should be secured via planning condition and included within the LEMP.

8.161 To minimise disturbance during construction, works will finish at least 30 minutes before sunset and commence no earlier than 30 minutes after sunrise during the bat activity period (April to October inclusive). If night working cannot be avoided, works will take place outside of the bat activity period and any lighting should be turned off when works are not in progress and light spill should be directed away from treelines and bat habitats. Details of construction lighting should be agreed with the LPA and secured via planning condition.

8.162 Lighting will be necessary in some areas during the operation of the development. For these areas a detailed lighting strategy will be put in place, agreed with the LPA and secured via planning condition, to ensure light spill onto adjacent habitats is avoided and will not diminish the value of the habitats that are retained, created and enhanced. Design of the lighting scheme will follow the principles within the Institution of Lighting Professionals Guidance (ILP, 2018 or latest good practice equivalent). Lighting should use narrow spectrum bulbs avoiding UV and white and blue wavelengths of the light spectrum.

8.163 General purpose crevice style bat boxes should be installed on mature trees away from artificial illumination. Bat roosting provision should also be incorporated into new buildings such as bat boxes or access tiles, or creation of a purpose-built bat roost and set out within the LEMP.

Badger

8.164 Information pertaining to badgers is provided under confidential **Appendix 8.4**.

Hazel Dormouse

8.165 The mitigation measures proposed below assume hazel dormouse are present at the time of works and should be reviewed and updated following completion of further surveys.

8.166 In order to further mitigate construction impacts on hazel dormouse from hedgerow removal, if present, vegetation clearance will be timed in order to encourage hazel dormouse to move into areas of retained (and enhanced) vegetation and under a Natural England European Protected Species Licence (EPSL) unless otherwise agreed with a licensed dormouse ecologist. This should be secured via planning condition and be obtained prior to any works affecting hedgerows/trees commencing.

8.167 The impacts of habitat loss, fragmentation, disturbance and predation will be mitigated by creation of new habitat in advance of vegetation removal works, and further habitat creation and enhancement as part of the Site detailed landscape design. This will ensure that displaced animals have sufficient habitat to move into and that habitat can support a robust population in the long-term. The landscaping on-site will include hedgerow planting and areas of scrubby vegetation connected to the wider landscape. This area of new vegetation will be at least equivalent to total area lost as a result of the Proposed Development and will require areas of new habitat to be managed specifically for hazel dormouse. This should be detailed within the LEMP and, if required, the Natural England EPS Licence.

8.168 To mitigate the impacts of lighting, any night-time lights will not permanently illuminate long sections of hedgerow or areas of scrub or other corridors used by hazel dormouse and should be secured via a lighting planning condition.

Otter and Water Vole

8.169 No otter or water vole field signs were noted during the surveys; however, the watercourses

could be used as commuting and foraging habitat by these species should they become established in the intervening time. A pre-works riparian mammal survey should be carried out prior to works commencing to check for any changes in this species' local distribution along drainage ditches on-site. This should be secured via planning condition.

Hedgehogs, Brown Hare and Terrestrial Invertebrates

8.170 During construction, hedgehog will be able to access the Site; however, should a hedgehog be found it should be moved with a gloved hand to a place of suitable shelter and security. At the reserved matters stage, the LEMP should set out how boundary treatments will include hedgehog passes within new fencing to allow continued access to the Site. The CEMP should include measures to minimise impacts to brown hare should they be found during construction. The LEMP should include planting mixes for the benefit of declining terrestrial invertebrates and include installation of bug boxes within the strategic landscape design.

Residual Effects

8.171 The following residual effects are anticipated based on data gathered to date, assuming the embedded mitigation and mitigation measures set out are implemented;

- Potential for short-term **minor negative (adverse)** temporary impact to reptiles during construction (if present) at the time of construction, not significant under the EIA Regulations;
- Potential for a long-term **minor positive (beneficial)** permanent enhancement of reptile habitat on Site (if present) at a Site level and not considered significant under the EIA Regulations;
- A **negative (adverse)**, permanent impact on farmland birds using arable crop habitats, significant at a Site level and not considered significant under the EIA Regulations. Confidence low;
- A **positive (beneficial)**, long-term permanent impact on generalist birds through increased provision of nesting and foraging habitat and increasing diversity of habitats through attenuation basins and significant at up to a Local level. Not considered significant under the EIA Regulations;
- Potential for short-term **minor temporary negative (adverse)** impact to hazel dormice during construction (if present) and not considered to be significant at greater than a Site level. Not considered significant under the EIA Regulations. Confidence low;
- Potential for a long-term **minor positive (beneficial)** permanent enhancement of hazel dormice habitat (if present) at up to a Site level. Not considered significant under the EIA Regulations;
- A **negative (adverse)** impact on a low status bat roost within T5, significant up to a Site level. Not considered significant under the EIA Regulations. Confidence low;
- A small, **positive (beneficial)**, long-term impact on common bat species through increase provision of roost sites and enhancing foraging/commuting habitat up to a Local level. Not considered significant under the EIA Regulations;
- A neutral impact on otter and water vole if found during construction. Not considered significant under the EIA Regulations;
- A small, **positive (beneficial)**, long-term impact on otters and water voles through increase foraging habitat available if they become established and significant at a Site level. Not

considered significant under the EIA Regulations;

- A **positive (beneficial)** permanent impact on hedgehogs at a Site level;
- Potential for permanent **negative (adverse)** impact to brown hare (if present) at the time of works at a Site level. Not considered significant under the EIA Regulations; and
- A **positive (beneficial**) permanent impact on terrestrial invertebrate assemblages at a Site level. Not considered significant under the EIA Regulations.

8.172 The predicted residual effects are not considered to be significant under the EIA Regulations.

Cumulative Effects

8.173 Cumulative impacts have been considered within the assessment of effects taking into consideration the potential cumulative impacts with schemes identified within Chapter 14.

8.174 The Proposed Development has been designed to mitigate ecological impacts within the Site boundary and provide ecological enhancement including enhancing the habitat connectivity and quality with the adjacent landscape.

Monitoring

8.175 The following monitoring measures are anticipated to be secured via planning condition:

- Each reserved matters application to demonstrate how the detailed layout and landscaping deliver the ecological enhancement and measurable biodiversity enhancement along the principles of this assessment within each reserved matters LEMP. The LEMP should set out monitoring measures to ensure the long term success of landscape planting;
- Should a EPSL from Natural England be required in respect of hazel dormice and/or bats then works should be undertaken in accordance with all monitoring requirements set out within the EPSL; and
- The CEMP to include timing of works, appointment of an Ecological Clerk of Works, the Reptile RAMS and any measures to be included from an EPSL.

Summary of Impacts

8.176 Overall, the Proposed Development with embedded and additional mitigation will have very few residual effects and none anticipated to be significant under the EIA Regulations. The effects that do remain are discussed for both the construction and operational phases of the Proposed Development.

8.177 **Table 8.6** provides a summary of impacts identified to date.

Table 8.6: Summary of Identified Impacts

ECOLOGICAL FEATURE	POTENTIAL IMPACT	EMBEDDED AND ADDITIONAL MITIGATION	RESIDUAL IMPACT
Pounce LWS	Sediment Input/Pollution from construction activities. Negative, temporary and significant at Site level.	Stringent Pollution Controls. Production and Implementation of CEMP.	Negligible. Not significant under EIA Regulations.

ECOLOGICAL FEATURE	POTENTIAL IMPACT	EMBEDDED AND ADDITIONAL MITIGATION	RESIDUAL IMPACT
Arable and arable field margins	Permanent loss of habitat. Significant at Site level.	None.	Permanent loss of habitat. Significant at Site level.
Semi-improved neutral grassland	Loss during construction. Potential for negative permanent impact if appropriate species mix not selected. Significant at Site level.	Each reserved matters application to be accompanied by a LEMP setting out how measurable biodiversity enhancement will be achieved through an appropriate native species mix.	Positive, permanent at a Site level. Not significant under EIA Regulations.
Hedgerows	Land take of species-rich hedgerow for access. Embedded mitigation includes provision for net hedgerow enhancement. Potential for negative impact at Site level if appropriate species mix not selected and hedgerows not safeguarded during construction.	Enforcement of adequate RPAs in line with BS 5837:2012 Trees in Relation to Design, Demolition and Construction. Replacement hedgerow planting to ensure native species rich mix as detailed within a LEMP agreed at the reserved matters stage.	Positive permanent at a Site level. Not significant under EIA Regulations.
Watercourses	Net enhancement of standing water habitat through SuDS scheme. Positive, permanent at the Site level. Potential for construction impacts (direct/indirect) through pollution/incursions negative and temporary at a Site level.	Each reserved matters application to be accompanied by a LEMP setting out how the water features within the final SuDS design will use native species mix to enhance this habitat over the long term. Existing watercourse safeguarded during construction through CEMP.	Positive, permanent at a Site level. Not significant under EIA Regulations. Negligible. Not significant under the EIA Regulations.
Reptiles	Potential killing and injuring of individual reptiles during construction if present. Negative permanent at up to a Local level predicted (low confidence). Creation of attenuation ponds, species rich grassland, native shrub, tree planting and wetland grass areas for benefit of reptiles. Positive permanent at the Site level.	The CEMP to include a RAMS Method Statement when construction details are known to minimise impacts during construction to reptiles, should they be present at the time of works. The LEMP to set out measures to enhance the Site for reptiles over the long term including locations of reptile hibernacula, log piles etc.	Negative, temporary at a Site level. Not significant under EIA Regulations. Positive, permanent at a Local level. Not significant under EIA Regulations.

ECOLOGICAL FEATURE	POTENTIAL IMPACT	EMBEDDED AND ADDITIONAL MITIGATION	RESIDUAL IMPACT
Birds	Loss of habitats including arable fields, field margins which could affect bird species dependent on these habitats e.g. skylark. Negative and permanent at the Site level. Low confidence.	Creation of habitats to benefit wide skylark foraging birds through foraging insects through increasing invertebrate diversity (attenuations ponds/native planting).	Negative and permanent to arable dependent species at the Site level. Not significant under EIA Regulations.
	Risk of killing or injuring nesting birds during demolition/ vegetation clearance without mitigation. Negative and permanent at Local level.	Vegetation removal/building demolition will be undertaken outside of the bird breeding season (March - August inclusive) or under ecological supervision.	Negligible. Not significant under EIA Regulations.
	Creation of new scrub and tree and standing water features for benefit range of urban and farmland bird species. Permanent positive and significant at Local level.	LEMP to set out detailed landscape planting for benefit of urban and farmland birds including details of nest boxes.	Positive permanent significant at a Local level. Not significant under EIA Regulations.
Bats	Demolition of bat roosts if present at the time of building demolition (low likelihood). Negative and permanent at Site level.	CEMP to include precautionary method statement should a bat be suspected or found during demolition works should cease and a bat ecologist contacted.	Negligible. Not significant under EIA Regulations.
	Removal of hedgerow affecting roost in T5. Negative, permanent and significant at the Local level. Confidence low.	Further nocturnal survey of confirmed roosting sites during peak maternity period (June and July) to inform mitigation. Destruction of roosts under EPSL granted by Natural England or a site registration under the Bat Low Impact Class Licence (LICL) with accompanying bat mitigation plan which will include details of replacement roosting provision.	Positive. Permanent at Site level. Not significant under EIA Regulations. Confidence low.

ECOLOGICAL FEATURE	POTENTIAL IMPACT	EMBEDDED AND ADDITIONAL MITIGATION	RESIDUAL IMPACT
Bats	Creation of attenuation ponds and new planting, strengthening of boundary planting for foraging/ commuting bats. Positive, permanent at Local level. Construction lighting causing disturbance to foraging and commuting bats. New introduced lighting of previously unlit foraging corridors as a result of the Proposed Development. Negative, temporary and permanent up to a Local level.	Biodiversity enhancements including the provision of bat boxes on retained standard trees enhance roosting habitats for roosting bats. Implementation of a LEMP to ensure that bat foraging and commuting habitat is maintained and enhanced. Construction works will be restricted to hours of 07:30 to 17:00 Monday to Friday and 08:00-13:00 on Saturday. Impacts limited to areas subject to overnight security lighting. Detailed lighting design and specification, to be prepared at the detailed design stage should be bat friendly and developed with the input of a bat ecologist.	Positive. Permanent at Local level. Not significant under EIA Regulations. Negligible. Not significant under EIA Regulations. Confidence low.
Badgers	See separate confidential badger report (**Appendix 8.4**)		
Hazel dormice	Risk of killing or injuring hazel dormice if present during vegetation clearance without mitigation. Negative and permanent at Local level. Loss of sections of hedgerow and connectivity for hazel dormice (if present) to create access. Negative and permanent at Local level. Creation of new scrub and hedgerows embedded in layout assumes not for benefit of hazel dormice. Risk of predation from cats introduced from residents of new scheme (if present). Negative and permanent up to a Local level.	Complete surveys and, if required, no vegetation clearance until a EPSL has been obtained from Natural England or other appropriate mitigation put in place. Complete surveys. The LEMP (and if needed EPS mitigation strategy) to set out how new hedgerows will maintain connectivity for hazel dormice and hedgerow species selection and planting density for their benefit. As above. As above.	Negligible. Not significant under EIA Regulations. Confidence low. Negligible. Not significant under EIA Regulations. Confidence low. Positive and permanent and significant at a Local level if dormice are present. Not Significant under EIA Regulations. Confidence low Negligible. Not Significant under EIA Regulations. Confidence low.

ECOLOGICAL FEATURE	POTENTIAL IMPACT	EMBEDDED AND ADDITIONAL MITIGATION	RESIDUAL IMPACT
Otters and water voles	Risk of injury during construction due to use of heavy machinery in proximity to watercourse. Negative temporary and Site level. Enhancement of habitat for otters and water voles through attenuation basins if become present. Positive permanent at Site level.	Pre-commencement riparian mammal survey and, if present, appropriate mitigation implemented prior to works commencing. Excavations will be covered overnight or left with a plank of wood or similar to ensure that otters do not become trapped. Furthermore, all chemicals will be stored securely as set out in a CEMP. Each reserved matters application to be accompanied by a LEMP setting out how standing water could benefit these species if applicable at that stage.	Negligible. Not significant under EIA Regulations. Potential positive permanent at Site level. Confidence low. Not significant under EIA Regulations.
Hedgehogs, brown hare and terrestrial invertebrates	Risk of injury to hedgehog and brown hare during construction. Negative at the Site level. Permanent loss of habitat potentially used by brown hare. Negative and permanent at Site level (if present). Enhancement of habitats for hedgehogs and invertebrates and connectivity through landscape planting and creation of attenuation ponds. Positive. Permanent at Site level.	CEMP to include measures to safeguard hedgehogs and brown hare during construction. N/A LEMP to set out how barrier treatment to fences maintain habitat connectivity and planting benefit hedgehogs. Selection of planting for benefit of invertebrates and installation of bug boxes.	Negligible. Not significant under EIA Regulations. If present permanent, negative at Site level. Positive. Permanent at Site level. Not significant under EIA Regulations.

Flood Risk and Drainage

9.0 Flood Risk and Drainage

Introduction

9.1 This chapter addresses the flood risk and drainage impacts of the Proposed Development and affected catchment during its construction and operational phases, and has been prepared by CTP.

9.2 This chapter should be read in conjunction with the Flood Risk Assessment (FRA), included as **Appendix 9.1**.

Potential Impacts

9.3 The potential receptors to environmental impacts as a result of the Proposed Development and its construction are:

- Minor watercourses present within/adjacent to the Site;
- Anglian Water sewer network;
- Groundwater recharge; and
- Surface water runoff.

Methodology

9.4 The ES will consider the effects of the Proposed Development in comparison to the existing Site baseline conditions. These will be preserved, where possible, and will be considered as possible receptors when assessing the environmental impact of the Proposed Development.

9.5 The scale and extent of the assessment has been defined in consideration of environmental assessment guidance provided in Table A4.3 of the Design Manual for Roads and Bridges (DMRB) (Highways Agency et al, 2009) 4, which can be applied to assessing flood risk impacts; and on the author's professional judgement.

9.6 DMRB assessments are developed for the assessment of highway's projects and many of the criteria are developed around the results of highways specific assessment tools in the DMRB. Consequently, the assessment method is not followed in its entirety; only transferable elements are adapted for use in the assessment.

9.7 The assessment methodology has been adapted accordingly, based upon the EIA methodology which has been provided in the EIA Scoping Report (**Appendix 2.1**) and is detailed in Chapter 2 of the ES.

9.8 This assessment is based on current best practice guidance and accords with planning policy on flood risk and drainage at national, regional and local levels. Planning policy and guidance in this chapter is based upon includes the following.

NPPF

9.9 The NPPF was updated in July 2021 and sets out the Government's planning policies and how these are expected to be applied.

CIRIA Report C352 – Control of Water Pollution from Construction Sites

9.10 This report provides practical help for consultants and contractors on how to plan and manage construction projects to control water pollution.

UDC Local Plan (2005)

9.11 The current adopted UDC Local Plan (2005) sets out the Council's vision and a strategy for sustainable development. Within the Plan, Policy GEN3 relates to flood protection and ensuring new development proposals do not increase flood risk elsewhere with particular reference made to the disposal of surface water runoff generated by new development. Policy ENV12 relates to ensuring water resources are protected including contamination of groundwater and polluted surface water runoff.

UDC Strategic Flood Risk Assessment (2016)

9.12 In terms of flood risk, the Local Plan is supported by the UDC Strategic Flood Risk Assessment (SFRA) 2016, which forms part of the Local Plan Evidence Base. The guidance provided in this document requires local authorities and those responsible for development decisions to demonstrate that they have applied a risk based, sequential approach in preparing development plans and consideration of planning applications through the application of a sequential test. The SFRA is essential to enable a strategic and proactive approach to be applied to flood risk management.

Existing Baseline Conditions

9.13 The Site is located on land classified as greenfield, with a current arable farmland use, with an area of 18.3 hectares. A minor watercourse flows west through the northern section of the Site alongside the existing track.

9.14 The closest section of Environment Agency designated Main River (eastern arm of The Slade) is located 567m west of the Site. The Slade flows west through Saffron Walden to its confluence with the River Cam approximately 2 miles west of the Site at Home Farm.

9.15 The Site is located within Flood Zone 1, as shown on the Environment Agency Flood Map for Planning. This is the area shown to be at low risk of river flooding with less than 1 in 1,000 annual probability of river flooding (<0.1%).

9.16 The Environment Agency Long Term Flood Risk Map indicates that the Site is predominantly at very low risk of surface water flooding. Some areas of potential low risk are shown within the north of the Site, considered to be associated with the minor watercourse present. The mapping also indicates reservoir flooding presents no risk to the Site.

9.17 Geological data held by the BGS shows that the bedrock geology underlying the Site is Chalk. Superficial deposits of Lowestoft Formation Diamicton are present within the south east of the Site. Soilscapes mapping indicates the underlying soil as freely draining lime-rich loamy soils.

9.18 On-site infiltration testing has been undertaken and the use of infiltration for drainage purposes (soakaway) found to be unviable.

Evolution of the Baseline Conditions without Development

9.19 Mapping produced by the Environment Agency identifies the minor watercourses that flow within the Site to be within Flood Zone 1 and presents a low risk of river flooding and is at risk of surface water flooding. There is no information/data available to identify that this level of risk would change as a result of climate change beyond the baseline condition in the scenario where the Site remains in agricultural use.

9.20 The Site currently drains by natural processes involving infiltration to ground. This process by its nature is informal and there are no controls or restrictions to runoff rates generated at all storm event magnitudes.

9.21 The Drainage Strategy for the Proposed Development will result in a betterment to the rate of runoff received by the watercourses at present, and ultimately to the downstream catchment and surrounding land. This is because the Drainage Strategy has been designed to comply with local and national policy guidance and ensure the Proposed Development does not cause an increase in flood risk elsewhere. This is achieved through restricting the discharge rate to the annual average storm event and, therefore, runoff rates are managed in a more controlled manner providing the betterment outlined.

9.22 The required surface water drainage storage forming part of the Proposed Development to achieve the discharge restriction and hold back runoff generated, is designed with an allowance for the future effects of climate change and builds in additional storage to account for this.

Predicted Impacts

Construction Phase

9.23 The effects associated with the demolition and construction phase are generally considered to be short-term effects due to the temporary nature of the works.

9.24 Instances of water pollution during the construction period can occur from suspended solids, oils and hydrocarbons, concrete products, metal, sewage, other pollutants and hazardous material generated during the construction process. Situations in which such substances could enter the water environment include routine operations such as tyre-washing, accidents and vandalism. According to the Construction Industry Research and Information Association (CIRIA) guidance on the Control of Water Pollution from Construction Sites (2001), the most common instance of water pollution is from suspended solids. Possible sources of suspended solids from the construction of the Proposed Development include:

- Excavation;
- Exposed ground or stockpiles;
- Plant and wheel washing;
- Build-up of dust and mud on site roads;
- Pumping of contaminated surface waters or groundwaters accumulated on the development Site; and
- Disturbance of riverbed or banks.

9.25 Due to heavy machinery being used around the Site during the construction phase, further compaction of soil is likely. This can reduce infiltration rates further and lead to excess runoff throughout the Site.

9.26 Oil, diesel and petrol are also common pollutants from construction sites. The consequences of a spillage or leakage from construction traffic or machinery could have a large impact on the minor northern watercourse, the eastern ditch. This is considered to be of a medium magnitude of impact as the introduction of suspended solids may temporarily reduce water quality. Further pollution hazards may come from the uncontrolled release of substances such as rubbish, solvents, cleaning products, paints and other chemicals.

9.27 Construction activity is likely to remove topsoil from the Site and lead to additional surface compaction. This would reduce the rate of infiltration currently experienced on Site and increase the rate and volume of surface water runoff. The effect of construction works on the Site is likely to result in short-term disruption to the rate of infiltration. The movement of construction traffic may also disturb the upper portions of the ground surface within the construction site compacting it, which will again alter the degree of surface water infiltration and runoff.

9.28 Other hazardous material and suspended solids have the ability to contaminate the groundwater during the construction phase with a moderate magnitude of impact, this would directly affect the bedrock aquifer within the Site.

9.29 As the Proposed Development is located in Flood Zone 1 and outside a defined floodplain area, there should be no impacts resulting from the Proposed Development in the construction phase in terms of any loss of floodplain and fluvial floodwater storage capacity.

9.30 Due to the size of the Proposed Development, there could be a large presence of construction staff during the development phases. Staff on-site will require welfare facilities which may have an impact on the existing public sewer network in terms of additional flows directed into it.

Operational Phase

9.31 The Site is located within Flood Zone 1 and at low risk of river flooding based upon the Environment Agency Flood Map for Planning and there being no reported history of flooding to the Site as detailed within the FRA in **Appendix 9.1**. The Proposed Development will not result in the loss of floodplain storage capacity and cause an increase in fluvial flood risk on this basis.

9.32 The potential impacts associated with the increase in impermeable area, as a result of the Proposed Development, is increased runoff volumes and rates, which could potentially impact on the waterbodies on-site as outfalls, which, without mitigation could potentially lead to an increase in flood risk on-site, downstream of the Site and adjacent third party land.

9.33 The construction of a new residential development will place additional foul drainage capacity loading on the public foul sewer network. Any impact on the foul sewer network will need to be addressed in consultation with Anglian Water under a Section 106 Agreement. Connection may need to be made with the proviso for network improvements and enabling works as specified by Anglian Water.

Evaluation of Predicted Impacts

9.34 The impacts associated with the construction phase of the Proposed Development are considered to be temporary, uncertain, yet reversible and short-term in length. The operational phase impacts are long-term and permanent.

9.35 The identified impacts prior to mitigation are identified in **Table 9.1**. Receptor sensitivity, magnitude and significance, as shown in **Table 9.1**, were assessed following the methodology in Chapter 2.

Table 9.1: Flood Risk and Drainage Evaluation of Predicted Impacts

POTENTIAL IMPACTS	DESCRIPTION OF POTENTIAL EFFECT	DIRECT / INDIRECT	RECEPTOR/ BASELINE SENSITIVITY	MAGNITUDE	SIGNIFICANCE
CONSTRUCTION PHASE					
The impacts of construction may affect watercourse water quality.	• Ground disturbance may erode and indirectly affect surface waters through sediment mobilisation and increased sediment concentration in runoff entering a drain or watercourse. Sediment mobilisation will be more prevalent during periods of heavy rain and during dry periods where windblown sediment could enter watercourses. • Incidents through spillage of pollutants to the ground surface. • Loss of chemicals and fuels stored on-site. Incidents that result in the loss of pollutants to surface water from vehicles transporting construction materials or products or waste materials to and from the Site. • Regrading of the ground profile/topography could remove/introduce pollutant pathways to the watercourse.	Indirect	Moderate	Moderate	Moderate/Minor Adverse
The impacts of construction may affect watercourse flood risk and temporary flood risk.	• The creation of temporary structures and construction of permanent structures introduces impermeable areas and increases runoff volumes. Soil permeability may also decrease due to soil compaction. • Regrading of the ground profile/topography could remove/introduce flow paths and direct flood water to areas previously not at risk of flooding.	Direct / Indirect	Low	Minor	Minor/Negligible Adverse
The impacts of construction may affect watercourse geomorphology.	• The removal or creation of new flow paths could alter in-channel velocities with resultant scour and deposition. • Increased overland surface water velocity could scour riverbanks at discharge points leading to bank instability, increased sedimentation, scour and deposition.	Indirect	Low	Minor	Minor/Negligible Adverse
The impacts of construction may affect surface water flood risk and temporary surface water flood risk.	• The creation of temporary structures and construction phase of permanent structures introduces impermeable areas and increases runoff volumes. • Regrading of the ground profile/topography could remove/introduce flow paths and direct flood water to areas previously not at risk of flooding.	Direct	Moderate	Minor	Minor Adverse

POTENTIAL IMPACTS	DESCRIPTION OF POTENTIAL EFFECT	DIRECT / INDIRECT	RECEPTOR/ BASELINE SENSITIVITY	MAGNITUDE	SIGNIFICANCE
The impacts of construction may affect surface water quality.	• Ground disturbance may indirectly affect surface waters by sediment in any runoff entering a drain or watercourse thereby affecting surface water quality. • Incidents from spillage of pollutants to the ground surface. • Loss of chemicals and fuels stored on-site. Incidents that result in the loss of pollutants to surface water from vehicles transporting construction materials or products or waste materials to and from the Site.	Indirect	Moderate	Moderate	Moderate//Minor Adverse
The impacts of construction may cause disturbance or contamination of groundwater.	• Spillage of pollutants to the ground surface could infiltrate into superficial deposits. • Loss of chemicals and fuels stored on-site. Incidents that result in the loss of pollutants to groundwater from vehicles transporting construction materials or products or waste materials to and from the Site. • Construction activities such as piling, and excavation could create new pathways for pollutants to move from the surface to the aquifer.	Indirect	Low	Minor	Minor/Negligible Adverse
Impacts of construction may affect the public sewer network.	• Introduction of welfare facilities on a large construction site and connections to the sewer network could affect local sewer capacity.	Direct	Moderate	Minor	Minor Adverse
OPERATIONAL PHASE					
Impacts of the Proposed Development may affect surface water flood risk.	• Low permeability areas such as roads, car parks and roof structures reduce the ability of the Site to accept rainfall volumes. • Efficient Site drainage such as guttering, and highway drainage increase the Site's sensitivity to rainfall and reduce response time to rainwater reaching the receptor.	Direct	Low	Moderate	Minor Adverse
Impacts of the Proposed Development may affect watercourse flood risk.	• Low permeability areas such as roads, car parks and roof structures reduce the ability of the Site to accept rainfall volumes.	Direct	Low	Minor	Minor/Negligible Adverse

POTENTIAL IMPACTS	DESCRIPTION OF POTENTIAL EFFECT	DIRECT / INDIRECT	RECEPTOR/ BASELINE SENSITIVITY	MAGNITUDE	SIGNIFICANCE
Impacts of the Proposed Development may affect surface water quality.	• Incidents because of spillage of pollutants to the ground surface. • Loss of chemicals and fuels stored within the Proposed Development. Incidents that result in the loss of pollutants to surface water from vehicles, in the form of oil/ fuel and household chemicals such as detergents.	Direct	Moderate	Moderate	Moderate/Minor Adverse
Impacts of the Proposed Development may affect watercourse water quality.	• Incidents because of spillage of pollutants to the ground surface. • Loss of chemicals and fuels stored within the Proposed Development. Incidents that result in the loss of hydrocarbon pollutants to surface water from vehicles, household chemicals including detergents.	Indirect	Moderate	Moderate	Moderate/Minor Adverse
Impacts of the Proposed Development may affect the public sewer network.	• Introduction of new dwellings and residents will place additional load pressure on the receiving sewer network capacity.	Direct	Moderate	Moderate	Moderate/Minor Adverse

Mitigation

9.36 Mitigation measures are designed to reduce the potential for impacts on hydrology, flood risk and water quality. The mitigation measures proposed are discussed below:

- It is recommended that a phased approach is implemented for the construction works with mitigation measures for the operational stage, such as the drainage system, being constructed as a priority to ensure water is adequately treated prior to leaving the Site.
- Construction site security should be considered to reduce potential for vandalism which may result in contaminants reaching the water environment.
- To reduce the impact on surface water rates as a result of soil compaction, the movement of larger vehicles should be restricted or by creating a designated pathway for them to follow, reducing the area impacted.
- The Sustainable Drainage System (SuDS) and drainage infrastructure for the Proposed Development will be constructed as a priority for one of the first phases of construction.
- The erosion of exposed topsoil (including the erosion of stockpiled materials), caused by either wind or rain, is of the primary sources of suspended solids and other contaminants. As a result, large areas of exposed topsoil or similar materials will be contained and covered/watered down where possible and when not in use.
- Wheel washing facilities and/or regular sweeping will ensure the build-up of dust and silts on haul roads will be kept to a minimum. Wheel washing facilities will be kept in a designated bunded impermeable area and surplus surface water disposed via the foul water system or adequately treated prior to discharge into a local watercourse. These facilities should be located at least 10 metres from any surface waterbody.
- Concrete should be mixed off-site where possible. Should this not be practical, wastewater from concrete production/wastewater from lorry washing should be limited to a designated area, to be bunded over an impermeable surface to prevent runoff/infiltration elsewhere. Wastewater should either be directed into the foul sewer network or adequately treated prior to discharging into a watercourse.
- To avoid hydrocarbons reaching the water environment from vehicles or the accidental spillage of fuels, vehicles used on the Site should be regularly inspected and maintained to reduce the risk of oil/fuel leakages. Vehicle washdown areas should be at least 10 metres from surface water bodies, and take place at bunded areas over impermeable surfacing, with runoff routed through oil interceptors and treated before discharge.
- On-site refuelling activities should be undertaken in a bunded area over impermeable surfaces to prevent runoff and infiltration. Surface water from such areas should be routed through an oil separator prior to disposal.
- Where oils or fuels are stored in bulk quantities, the storage facilities should be suitable for above ground oil storage tanks.
- Drip trays under vehicles should be used where appropriate, allowing oil to be collected and contained.

9.37 To account for the above discussed mitigation measures it is recommended that a CEMP is prepared which will set out detailed methodologies and monitoring requirements of the measures below to prevent adverse effects on the water environment. The CEMP can be controlled by a condition attached to a planning consent by UDC.

9.38 The Proposed Development will be wholly located in Flood Zone 1, hence fluvial flood risk mitigation is not considered to be necessary. Mitigation for the risk of overland surface water flooding will be provided by setting finished floor levels above surrounding finished ground levels and can be built into the design.

9.39 It is proposed that surface water runoff is limited to the annual average greenfield runoff rate. This approach seeks to mimic the Site's natural drainage regime, minimising the impact on the wider catchment. Water will be attenuated at the Site prior to discharge using SuDS, with storage provided up to the 1 in 100 year plus climate change event. A 40% climate change allowance is to be provided. Limiting runoff from the Site, and accommodating it on-site up to the aforementioned event, provides betterment over the current drainage regime.

9.40 Runoff from highways and parking areas should be treated prior to discharge. It is proposed that two levels of treatment area provided in the form of source control techniques, including permeable paving, swales and attenuation basins. Additionally, pollution control methods such as oil and sediment interceptors should be used.

9.41 UDC can control the implementation of the proposed drainage design and finished floor levels to meet with the planning policy requirements and ECC drainage requirements through appropriately worded conditions attached to the planning consent.

9.42 Foul drainage will be disposed of through a gravity drainage pipe network with connection to the Anglian Water foul sewer system. Consultation with Anglian Water has identified the principle of such a connection is acceptable and that the public sewer network has capacity to receive flows generated by the Proposed Development without any additional improvement works. Therefore, the impact on the existing network will be negligible.

Residual Effects

9.43 It is recommended that a CEMP is prepared which will set out detailed methodologies and monitoring requirements to prevent adverse effects on the water environment and flood risk. As a result, there will be **negligible** residual effects from the development during the construction phase.

9.44 The Proposed Development will remain in Flood Zone 1, hence the residual effect on flood flows is considered to be **negligible.**

9.45 The Surface Water Drainage Strategy proposed will limit runoff at the Site to the annual average greenfield rate and provide attenuation up to the 1 in 100 year plus climate change event. This will have a **minor beneficial** effect by reducing runoff to the surrounding area and providing water quality improvements.

9.46 It is Anglian Water's duty to ensure that an appropriate connection can be established and agreed, which will not detrimentally impact upon the current sewer network infrastructure. Therefore, the residual effect on the existing network will be **negligible.**

Cumulative Effects

9.47 All surrounding developments are subject to the same guidance and legislation concerning flood risk. Therefore, all sites should provide appropriate built in by design mitigation measures to ensure flood risk is not increased elsewhere; including surface water drainage attenuation

volumes, water quality treatment and runoff rates that do not pose a flood risk to the Proposed Development Site or third party land. On this basis, there are not considered to be any adverse cumulative effects with regards to the Proposed Development in terms of flood risk or drainage.

Monitoring

9.48 No operational phase monitoring is required from a flood risk and drainage perspective as part of the Proposed Development.

Summary of Impacts

9.49 The impacts on flood risk and drainage for the Proposed Development have been assessed in line with the NPPF and all other relevant legislation, guidance, planning policy and technical documentation. The assessment has shown that there would be no significant impacts arising from the Proposed Development following the implementation of the proposed mitigation measures.

9.50 **Table 9.2** presents a 'Summary of Impacts Table' that outlines the conclusions of the assessment process.

Table 9.2: Summary of Impacts: Flood Risk & Drainage

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Impacts of construction on watercourse water quality	Dist/Loc	Mod	Mod	Adv	Rev	ST	Mod/ Min	CEMP	Ben	Rev	ST	Neg
Impacts of construction on watercourse flood risk and temporary flood risk	Loc	Low	Min	Adv	Rev	ST	Min/ Neg	CEMP.	Ben	Rev	ST	Neg
Impacts of construction on watercourse geomorphology	Loc	Low	Min	Adv	Rev	ST	Min/ Neg	CEMP.	Ben	Rev	ST	Neg
Impacts of construction on surface water flood risk and temporary surface water flood risk	Dist/Loc	Mod	Min	Adv	Rev	ST	Min	CEMP.	Ben	Rev	ST	Neg
Impacts of construction on surface water quality	Dist/Loc	Mod	Mod	Adv	Rev	ST	Mod/ Min	CEMP.	Ben	Rev	ST	Neg
Impacts of construction on groundwater	Loc	Low	Min	Adv	Rev	ST	Mod/ Neg	CEMP.	Ben	Rev	ST	Neg
Impacts of construction on the public sewer network	Dist/Loc	Mod	Min	Adv	Rev	ST	Min	Prior approval from Anglian Water	Ben	Rev	ST	Neg
Impacts of the Proposed Development on surface water flood risk	Loc	Low	Mod	Adv	Irrev	LT	Min	Surface Water Drainage Strategy/ development layout/raised finished floor levels	Ben	Irrev	LT	Neg
Impacts of the Proposed Development on watercourse flood risk	Loc	Low	Min	Adv	Irrev	LT	Min/ Neg	Surface Water Drainage Strategy/ development layout/raised finished floor levels/location of Site in Flood Zone 1	Ben	Irrev	LT	Neg

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Impacts of the Proposed Development on surface water quality	Dist/Loc	Mod	Mod	Adv	Irrev	LT	Mod/ Min	Surface Water Drainage Strategy.	Ben	Irrev	LT	Min Ben
Impacts of the Proposed Development on watercourse water quality	Dist/Loc	Mod	Mod	Adv	Irrev	LT	Mod/ Min	Surface Water Drainage Strategy.	Ben	Irrev	LT	Neg
Impacts of the Proposed Development on the public sewer network	Dist/Loc	Mod	Mod	Adv	Irrev	LT	Mod/ Min	Agreement with Anglian Water for sewer network capacity upgrade where required	Ben	Irrev	LT	Neg

Key

Loc: Local	Dist: District	Med: Medium	Ben: Beneficial	Irrev: Irreversible	LT: Long Term
Neg: Negligible	Mod: Moderate	Min: Minor	Adv: Adverse	Rev: Reversible	ST: Short Term

Landscape

10

10.0 Landscape & Visual

Introduction

10.1 This chapter assessed the likely significant effects of the Proposed Development on landscape and visual receptors. The chapter has been prepared by Chartered Landscape Architects at Define, who are qualified and experienced in preparing Landscape and Visual Impact Assessments (LVIA). This assessment follows the Guidelines for Landscape and Visual Impact Assessment 3rd Edition[1] (GLVIA3).

10.2 This chapter provides the following:

- Assessment of the existing baseline conditions with regards to key landscape components and available views, to identify receptors with the potential to experience change;
- Assessment and evaluation of the sensitivity of those receptors to change based on their susceptibility and value;
- Description of the nature of the changes resulting from the Proposed Development and assessment and evaluation of the magnitude of change upon landscape and visual receptors with regard to scale, duration, permanence and value;
- Assessment of the significance of identified effects;
- Mitigation measures to reduce, offset or remedy identified adverse impacts. The design process is iterative and some mitigation measures are intrinsic to the design;
- Assessment of the cumulative effect of the Proposed Development in combination with the committed development that has the potential for cumulative landscape and visual effects alongside this development; and
- Assessment of the residual effects after mitigation has been accounted for.

10.3 This chapter is supported by the following Appendices:

- Appendix 10.1: Supporting Landscape Figures
- Appendix 10.2: Landscape Schedules
- Appendix 10.3: Visual Amenity Schedules

Potential Impacts

10.4 The following potential landscape and visual impacts were identified at the Scoping Stage.

- Landscape elements: introduction or removal of trees, vegetation and built features and other elements, which together form landscape patterns;
- Landscape patterns: degradation or erosion of groups and arrangements of landscape elements, which form patterns that are characteristic of landscape character types;
- Landscape character: the landscape character is a product of a combination of factors that contribute to the creation of a unique setting. Landscape character is a product of the combination of geological features, geomorphic processes, floral and wildlife associations, with social, economic and cultural forces; and

1 Landscape Institute and Institute of Environmental Management & Assessment (LI and IEMA). (2013). Guidelines for Landscape and Visual Impact Assessment. 3rd Ed. Third Edition. Routledge, London and New York

- Cumulative landscape effects: these are defined by the Landscape Institute as effects resulting from additional changes to landscape amenity caused by the Proposed Development in conjunction with other development (associated or separate from it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.

10.5 The Proposed Development has the potential to have the following effects on views, and general visual amenity of people who have (or will have) views of the development. Visual effects may include:

- Visual obstruction: physical blocking of view;
- Visual intrusion: the visual intrusion of the Proposed Development into an existing view or loss of particular landscape element or features already present in the view; and
- Cumulative visual effects: the cumulative or incremental visibility of similar types of development may combine to have cumulative visual effects. This may concern intervisibility where more than one development may be viewed simultaneously from a viewpoint, or occur sequentially where developments may be viewed from a number of differing locations, most commonly from a road, rail route or long-distance path.

Methodology

10.6 This section follows the guidance set out in GLVIA3.

10.7 In respect of photography, the LVIA follows the guidance set out in Technical Guidance Note 06/19, published by the Landscape Institute in September 2019[2].

10.8 The extent and depth of the assessment should be appropriate and proportionate to the scale of the project that is being appraised and the nature of its likely effects. A formulaic approach to assessing effects, on both landscape resource and visual receptor, is not followed.

10.9 To assist with clarity of assessment, the terms low, medium and high are used for susceptibility, value, sensitivity and magnitude of effect, and Major, Moderate, Minor and Negligible in relation to significance. Nature of effect is judged to be beneficial, neutral or adverse.

10.10 Matrices and tables are not used to determine judgements in respect of sensitivity, magnitude of effect or significance, they are provided to assist in the communication of these matters. Assessments do not follow a strictly formulaic approach, for example, in respect of susceptibility a leisure walker (which is a receptor of typically higher sensitivity to change) can have a low, medium or high susceptibility to a type of visual change, depending on the nature of the view, and their experience. Similarly, a non-designated landscape could, when using fixed matrix based judgement, not have a high susceptibility to change, however this would ignore specific or detailed local qualities that might allow a landscape to be judged more accurately as high susceptibility.

10.11 Sensitivity is particular to the type of change, rather than inherent. The emphasis of the assessment, therefore, relies on explanation of the logic behind a judgement of sensitivity, magnitude of effect and significance, with matrices provided only to summarise and communicate the various assessment considerations.

2 Landscape Institute (2019). *Technical Guidance Note 06/19 Visual Representation of Development Proposals.* [online]. Available at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/09/LI_TGN-06-19_Visual_Representation.pdf [Accessed June 2021].

10.12 Reference can be made to both 'impact' and 'effect'. 'Impact' is used in reference to the action being taken (such as vegetation loss), whereas the 'effect' is defined as the change (beneficial or negative) that results from that action, or from the whole development.

10.13 The representativeness of the viewpoint location should be considered (for example, if a 'worst case' condition, such as through a gap in a hedgerow, is not representative of the typical visual experience this should be explained).

10.14 The likely seasonal effects should be addressed where this leads to a notable change in effect.

Assessing Landscape Effects

10.15 The evaluation of effects on the landscape resource initially considers the sensitivity of the landscape. This term is interpreted as a combination of its susceptibility (its relative ability to accommodate change of a particular type without undue consequences to its baseline) and separately its value (which considers a number of factors, such as landscape quality, scenic quality, representativeness, rarity, recreational use, conservation interests, perceptual considerations and other associations). The susceptibility of the landscape and separately its value can be identified as being low, medium or high (see **Table 10.1**).

10.16 The magnitude of effect is then considered, with an assessment of the type of development, the extent of change, its reversibility and duration, with a conclusion of low, medium, high or negligible effect (see **Table 10.3**).

10.17 The significance of effects on the landscape is a product of considering the landscape's ability to receive the type of change proposed, combined with its value (sensitivity) and the magnitude of effect of the proposed change on the landscape.

10.18 Our approach for combining sensitivity and magnitude of effect uses that promoted by the Landscape Institute and Institute of Environmental Management and Assessment which openly considers the relative aspects of sensitivity and magnitude of effect to conclude the overall effect and whether the overall effect is significant or not significant. (see **Table 10.4** and **Figure 1**). This judgement does not translate from a fixed matrix but allows flexibility to respond to the detailed considerations of the assessor. The assessment should consider other factors that might create a split assessment, and what these differences might be. The assessment should also consider the duration associated with the effect, whilst also clearly identifying the role of mitigation in any assessment.

10.19 The nature of effect on the landscape is also considered, with an assessment on the positive and/or negative elements of the Proposed Development in comparison to the existing Site and its surroundings. This assessment will not consider architectural merit or subjective aesthetics. The nature of change can be identified as being adverse, beneficial or neutral (see **Table 10.5**).

Assessing Visual Effects

10.20 The evaluation of effects on the visual amenity considers the susceptibility of the viewer considering the type of receptor and activity, along with their visual expectation, and the importance of the view. Its value is separately assessed by considering its popularity, volume of use and status (i.e. if it has been protected or recognised in any planning-based documents). These factors are considered to be low, medium or high (or negligible where sensitivity to change would be barely perceptible) (see **Table 10.2**).

10.21 The magnitude of visual effect is considered in respect of the scale of change visible, how much this change contrasts or integrates with the existing view, the angle of the view to the receptor movement, the distance of the view, and the extent of which the change occupies the view. All of these factors are considered to contribute towards a low, medium or high magnitude of effect (or negligible where the effect is barely perceptible) (see **Table 10.3**).

10.22 As per landscape effects, the significance of visual effects is a product of considering the sensitivity of the receptor to the type of change proposed and the magnitude of effect of the proposed change on the view. These matters are combined in the same way as landscape receptors.

10.23 The nature of the visual effects is also considered, with an assessment on the positive and/or negative elements of the Development in comparison to the existing Site and its surroundings. This assessment will not consider architectural merit or subjective aesthetics. The overall judgement of the nature of effect involves a reasoned professional overview of the individual judgements against the criteria of **Table 10.5**, to identify the nature of effect as being adverse, beneficial or neutral.

Significant Effects

10.24 The significance of the impacts is determined by a combination of the sensitivity of the receptor or receiving environment and the magnitude of the predicted changes, the criteria used to assess the significance are set out below in **Table 10.4** and **Figure 1**, however, there is not a fixed formula for establishing what is or is not significant, professional judgment needs to be applied. For example, major loss of key landscape elements that are essential to nationally valued landscapes are likely to be of the greatest significance and reversible effects to elements that are not essential to landscapes of community value are likely to be of the least significance. The balanced and proportionate application of professional judgment is required to form a conclusion relating to significance.

10.25 The following matrices summarise the assessment considerations and judgements made in respect of sensitivity and magnitude of effect for both visual and landscape effects.

Table 10.1: Landscape Sensitivity

	SUSCEPTIBILITY	VALUE
High	Consideration of the landscape structure, including its characteristics and elements, to identify the capacity of the landscape to receive change without undue consequences leads to the conclusion that the landscape has high susceptibility to the type and degree of change proposed on the Site.	Consideration of the condition of the landscape, its scenic quality, rarity, representiveness, conservation interest, recreational value, perceptual aspects and other associations leads to the conclusion that the landscape has high value. These landscapes are expected to have national designation, or demonstrate very high local value.

	SUSCEPTIBILITY	VALUE
Medium	Consideration of the landscape structure, including its characteristics and elements, to identify the capacity of the landscape to receive change without undue consequences leads to the conclusion that the landscape has medium susceptibility to the type and degree of change proposed on the Site.	Consideration of the condition of the landscape, its scenic quality, rarity, representiveness, conservation interest, recreational value, perceptual aspects and other associations leads to the conclusion that the landscape has medium value. These landscapes are expected to have a local designation/policy or notable landscape elements of recognised value.
Low	Consideration of the landscape structure, including its characteristics and elements, to identify the capacity of the landscape to receive change without undue consequences leads to the conclusion that the landscape has low susceptibility to the type and degree of change proposed on the Site.	Consideration of the condition of the landscape, its scenic quality, rarity, representiveness, conservation interest, recreational value, perceptual aspects and other associations leads to the conclusion that the landscape has some value but it is categorised as being low. These landscapes are not expected to have formal, character or quality based designations.
Negligible	Consideration of the landscape structure, including its characteristics and elements, to identify the capacity of the landscape to receive change without undue consequences, leads to the conclusion that the landscape has negligible susceptibility to the type and degree of change proposed.	Consideration of the condition of the landscape, its scenic quality, rarity, representiveness, conservation interest, recreational value, perceptual aspects and other associations leads to the conclusion that the landscape has negligible or no value.

Table 10.2: Visual Sensitivity

	SUSCEPTIBILITY	VALUE
High	Consideration of the receptor type, activity and expectation, and frequency of use leads to the conclusion that the viewer would have high susceptibility to the type and degree of change proposed to the view.	Consideration of the formal status of the view, reference to the view in published literature and visitor information leads to the conclusion that the view has high value. Such views are likely to be specifically identified in planning documentation or local guides/plans.

	SUSCEPTIBILITY	VALUE
Medium	Consideration of the receptor type, activity and expectation, and frequency of use leads to the conclusion that the viewer would have medium susceptibility to the type and degree of change proposed to the view.	Consideration of the formal status of the view, reference to the view in published literature and visitor information leads to the conclusion that the view has medium value. Such views might be located within a designated area identified in planning documentation or local guides/ plans or be subject to policies that indicate their value.
Low	Consideration of the receptor type, activity and expectation, and frequency of use leads to the conclusion that the viewer would have low susceptibility to the type and degree of change proposed to the view.	Consideration of the formal status of the view, reference to the view in published literature and visitor information leads to the conclusion that the view has some value but it is categorised as being low. Such views are very unlikely to be identified in planning documentation or local guides/plans.
Negligible	Consideration of the receptor type, activity and expectation, and frequency of use leads to the conclusion that the viewer has negligible susceptibility to the type of change proposed to the view.	Consideration of the formal status of the view, reference to the view in published literature and visitor information leads to the conclusion that the view has negligible or no value. Such views will not be identified in planning documentation or local guides/ plans.

Table 10.3: Magnitude

	VISUAL	LANDSCAPE
High	Consideration of the scale, contrast, integration and extent of visual change, along with assessment of the angle of change to the viewer, and the distance of the view, leads to the conclusion that the magnitude of visual effect is high.	Consideration of the scale, contrast, integration and extent of physical change leads to the conclusion that the magnitude of landscape effect is high.
Medium	Consideration of the scale, contrast, integration and extent of visual change, along with assessment of the angle of change to the viewer, and the distance of the view, leads to the conclusion that the magnitude of visual effect is medium.	Consideration of the scale, contrast, integration and extent of physical change leads to the conclusion that the magnitude of landscape effect is medium.

	VISUAL	LANDSCAPE
Low	Consideration of the scale, contrast, integration and extent of visual change, along with assessment of the angle of change to the viewer, and the distance of the view, leads to the conclusion that the magnitude of visual effect is low.	Consideration of the scale, contrast, integration and extent of physical change leads to the conclusion that the magnitude of landscape effect is low.
Negligible	Consideration of the scale, contrast, integration and extent of visual change, along with assessment of the angle of change to the viewer, and the distance of the view, leads to the conclusion that the magnitude of visual effect is negligible.	Consideration of the scale, contrast, integration and extent of physical change leads to the conclusion that the magnitude of landscape effect is negligible.

Table 10.4: Significance

	VISUAL	LANDSCAPE
Major	A combination of the sensitivity to change and magnitude of effect results in a development that has a major effect on visual amenity and is likely to be Significant. The judgement of Significance is made on a receptor by receptor basis within the assessment text.	A combination of the sensitivity to change and magnitude of effect results in a development that has a major effect on landscape character and is likely to be Significant. The judgement of Significance is made on a receptor by receptor basis within the assessment text.
Moderate	A combination of the sensitivity to change and magnitude of effect results in a development that has a moderate effect on visual amenity that could be Significant. The judgement of Significance is made on a receptor by receptor basis within the assessment text.	A combination of the sensitivity to change and magnitude of effect results in a development that has a moderate effect on landscape character and resource. The judgement of Significance is made on a receptor by receptor basis within the assessment text.
Minor	A combination of the sensitivity to change and magnitude of effect results in a development that has a minor effect on visual amenity. The effect is not Significant.	A combination of the sensitivity to change and magnitude of effect results in a development that has a minor effect on landscape character and resource. The effect is not Significant.
Negligible	A combination of the sensitivity to change and magnitude of effect results in a development that has a negligible effect on visual amenity. The effect is not Significant.	A combination of the sensitivity to change and magnitude of effect results in a development that has a negligible effect on landscape character and resource. The effect is not Significant.

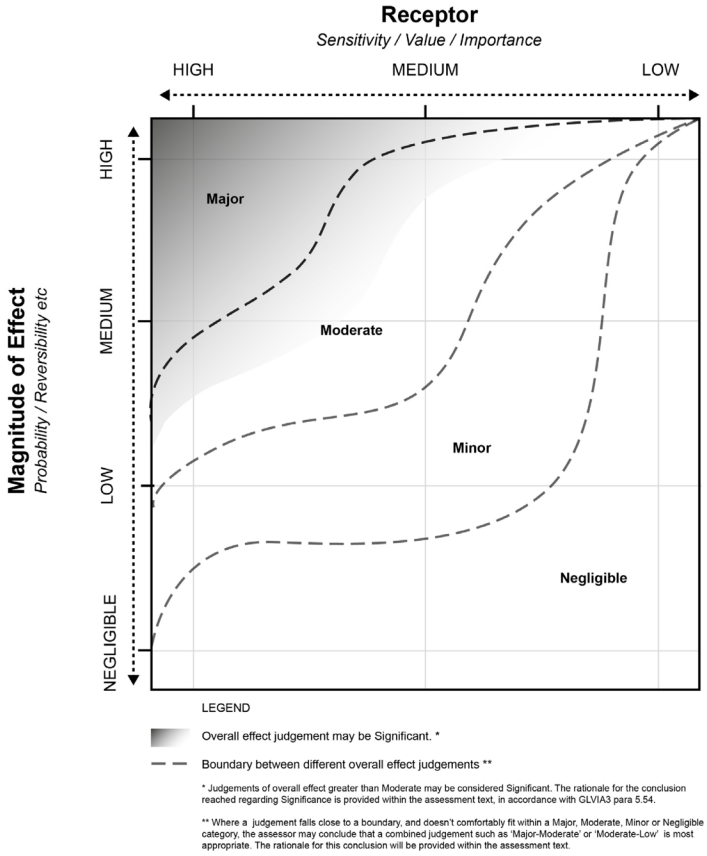


Figure 1 : Combining Judgements

Table 10.5: Nature of Effect

	VISUAL	LANDSCAPE
Adverse	The development would result in an effect where the Development will introduce elements that are discordant with the visual context or which detract from the existing condition in a detrimental manner.	The development would result in an effect where the Development will introduce elements that are discordant with the existing landscape resource/character or which detract from the existing condition in a detrimental manner.
Beneficial	The development would result in an effect where the development will complement or contribute to the visual context, strengthening it or adding positive qualities and characteristics that were previously poorly expressed or not present.	The development would result in an effect where the development will complement or contribute to the existing landscape resource/ character, adding positive qualities and characteristics that were previously poorly expressed or not present.

	VISUAL	LANDSCAPE
Neutral	The development would result in an effect where the development will neither contribute to nor detract from the receptor or view, but will be comfortably assimilated into the existing visual context.	The development would result in an effect where the development will neither contribute to nor detract from the existing landscape resource/ character, but will be comfortably assimilated into the existing landscape context.

Existing Baseline Conditions - Landscape

10.26 A 3 km study area (centered on the Site) was used as a preliminary study area to inform understanding of the baseline conditions of the Site and its context. It also allowed for the identification of sensitive landscape and visual receptors that could potentially be impacted by the Proposed Development. The 3km study area is shown on Figure 10.1 in **Appendix 10.1**. Following review of the baseline against the Proposed Development, the study area was further refined, to focus on receptors likely to experience impacts as a result of the Proposed Development. The final scope of the Landscape and Visual Impact Assessment is detailed below.

Landscape Designations

10.27 There are no national or local landscape designations within the Site boundary. Landscape, Ecology and Built Environment designations applicable to the 3km study area are shown on Figure 10.1 in **Appendix 10.1**.

10.28 A review of these designations and the criteria for their designation identified no pathway for impacts to be experienced as a result of development on the Site. They are therefore not considered further by the Landscape and Visual Impact Assessment.

National and Regional Landscape Character

10.29 There are a number of published landscape character studies that inform the baseline assessment of the landscape, these include the following:

- National Scale: National Character Area 86: South Suffolk & North Essex Clayland[3];
- Regional/Local Scale: Uttlesford Landscape Character Assessment[4] (see Figure 10.2 in **Appendix 10.1**):
  - A1 Cam River Valley;
  - B1 Ashdon Farmland Plateau;
  - B2 Hempstead Farmland Plateau;
  - B7 Debden Farmland Plateau; and
  - B1 Thaxted Farmland Plateau.

3 Natural England. (2013). *National Character Area Profile: 6*86: South Suffolk & North Essex Clayland. [online]. Available at: http://publications.naturalengland.org.uk/category/587130 [Accessed June 2021].

4 Chris Blandford Associates (2006) Braintree, Brentwood, Chelmsford, Maldon and Uttlesford Landscape Character Assessment

10.30 The character areas identified by both the National and Regional/Local Landscape Character Assessments are too large to experience significant effects as a result of the scale of development proposed and are not assessed by this LVIA. However, they provide a useful basis of understanding the Local Landscape Character. The key characteristics of the National and Regional/Local Character Areas are, therefore, summarised below.

10.31 **National Landscape Character Assessment:** The National Landscape Character Assessment was last updated by Natural England in 2013. It places the Site within the NCA 86 South Suffolk & North Essex Clayland, which covers a large area of land, from Bury St Edmunds in the north-west to Ipswich in the north-east, roughly following the line of the A14 trunk road through the Gipping Valley. It, therefore, includes a wide range of landscape characteristics, many of which do not relate to the Application Site. The following extract is of more relevance to land east of Saffron Walden, within which the Site is located:

"It is an ancient landscape of wooded arable countryside with a distinct sense of enclosure. The overall character is of a gently undulating, chalky boulder clay plateau, the undulations being caused by the numerous small-scale river valleys that dissect the plateau. There is a complex network of old species-rich hedgerows, ancient woods and parklands, meadows with streams and rivers that flow eastwards. Traditional irregular field patterns are still discernible over much of the area, despite field enlargements in the second half of the 20th century. The widespread moderately fertile, chalky clay soils give the vegetation a more or less calcareous character.

It is an area of notable medieval towns and villages…..which support many vernacular buildings dating from the 13th to 17th centuries…. Traditional settlements are characterised by organic street patterns, large churches – sometimes…overlooking village greens – and groups of colour-washed medieval houses with pegtile roofs interspersed with ones refronted with brick facades in Georgian or Victorian times. An intricate maze of narrow, winding lanes links settlements".

10.32 **Regional/Local Landscape Character Assessment:** The Uttlesford Landscape Character Assessment was published in 2006 and forms part of a wider assessment of Braintree, Brentwood, Chelmsford, Maldon and Uttlesford. It provides a borough/district wide landscape character study and identifies different Landscape Character Areas (LCA) within it. Figure 10.2 in **Appendix 10.1** illustrates that the Site is located within two LCAs, the Cam River Valley on the western half, and the Debden Farmland Plateaux on the eastern half. Further LCAs lie close to the Site with the Ashdon Farmland Plateaux adjacent the Site to the north, and the Hemptead farmland Plateaux and Thaxted farmland Plateaux further to the east.

10.33 The key descriptions of these Landscape Types are set out below:

Cam River Valley LCA

10.34 This landscape type extends from the Cambridgeshire-Essex boundary south to Newport and includes the historic settlement of Saffron Walden, including Audley Park. The eastern slopes (on which the Site sits) are characterized by a large-scale landscape of primarily arable fields, with some grazing pastures. Field pattern is regular, bounded by gappy hedgerows, drainage ditches and occasional trees. Views from the higher ground are often framed by distant patches of woodland and scattered copses. Settlement pattern is dispersed, with isolated farmsteads and nucleated villages.

10.35 This LCA includes the western half of the Site, and the key characteristics that are found within the Site are underlined below.

10.36 The landscape type's key characteristics are as follows:

- Rolling, open landscape of chalky boulder clay with wide views from higher ground;
- Well vegetated riverbanks with shrubs, trees and water meadows along the winding narrow river corridor;
- Large-scale downland reflecting late enclosure, with rectilinear field pattern;
- Low hedges and few trees mainly in small copses;
- Ancient town of Saffron Walden; and
- Dispersed settlements on valley sides connected by busy B roads.

10.37 Proposed Landscape Strategy Objectives include:

"Conserve - seek to protect and enhance positive features that are essential in contributing to local distinctiveness and sense of place"

10.38 Suggested relevant Landscape Planning and Management Guidelines include the following:

- Conserve and enhance the landscape setting of settlements;
- Maintain cross-valley views;
- Consider the landscape pattern and structure of large woodland areas and the role that they have in the composition of views to and from the area;
- Ensure that new woodland planting is designed to enhance landscape character and that species composition reflects local character;
- Ensure any new development on valley sides is small-scale and that it responds to historic settlement pattern, form and building materials; and
- Conserve and enhance existing hedgerows and restore where possible.

Debden Farmland Plateaux LCA

10.39 This landscape type encompasses the countryside south of Pounce Hall (close to the Site at Sewards End) in the northeast corner, across the farmland plateau to the south of the Site.

"The field pattern is a mixture of medium to large-scale irregular arable fields framed by dense patches of woodland and gappy hedgerows with some hedgerow trees. Some smaller scale fields are apparent near settlements. Woodland is predominantly deciduous and adds a visible framework to the landscape in all seasons. Remnant ancient woodland is scattered throughout the countryside. Trees also give structure to this landscape, surrounding settlements, fields, and lanes. In contrast, the higher ground is more open, with large fields surrounded by broken hedgerows, ditches, and grassy tracks. Views can be panoramic but are often blocked by distant woodland blocks or linear windbreaks. Pedestrian links are ample, including Harcamlow Way between Newport and Thaxted. This area has long been settled; historic moats and manors dot the countryside, as do a rich variety of vernacular buildings. Local materials range from colour-washed plaster or half-timbered, to flintwork and red brick. This is a textured, varied landscape, with a strong sense of tranquility that is only interrupted by the proximity to a busy road, or the planes into Stansted".

10.40 This LCA includes the eastern half of the Site, and the key characteristics that are found within the Site are underlined below.

10.41 The landscape type's key characteristics are as follows:

- Dense woodland patches or copses, many of them ancient, provide structure in the landscape;
- Gently rolling plateau incised by River Cam in the south, Debden Water west of Debden, and a small section of the River Pant in the northeast corner near Bears Hall;
- Tall trees or overgrown hedgerows line some roads or lanes;
- Broken hedgerows evident or absence of hedgerows due to agricultural intensification;
- Expansive views on open roads at higher elevations;
- Settlements visible in most directions; and
- Rich cultural heritage with many vernacular buildings.

10.42 Proposed Landscape Strategy Objectives include:

"Conserve - seek to protect and enhance positive features that are essential in contributing to local distinctiveness and sense of place"

10.43 Suggested relevant Landscape Planning and Management Guidelines include the following:

- Conserve the rural character of the area;
- Ensure that any new development responds to historic settlement pattern, especially scale and density, and that use of materials, and colour, is appropriate to the Local Landscape Character. Such development should be well integrated with the surrounding landscape;
- Conserve open views to historic buildings and local landmarks like churches; and
- Strengthen and enhance hedgerows with hawthorn where gappy and depleted.

Ashdon Farmland Plateaux LCA

10.44 This landscape type encompasses land immediately to the north of the Site.

10.45 The landscape type's key characteristics are as follows:

- Gently undulating glacial boulder clay (till) with broad ridges on the high ground;
- Scattered farmsteads, hamlets and a few large villages;
- Irregular field pattern follows topography;
- Roads and lanes rarely straight;
- Ancient landscape with subtle qualities; and
- Wide views from open roads on high plateau contrasts with enclosed nature of wooded areas in valley bottoms.

10.46 Due to the Site being located beyond this landscape type and not regularly displaying its characteristics, this landscape type is not identified as a landscape receptor to be assessed further.

Hempstead Farmland Plateaux LCA

10.47 This landscape type encompasses the countryside east of Sewards End starting at a distance of >1km and lies outside the identified ZTV (see Figure 10.8 in **Appendix 10.1**).

10.48 Its key characteristics are identified as follows:

- Rolling arable farmland and hills surrounding steep valleys with small streams;
- Settlements located in the valleys;
- Number of interesting and colourful vernacular buildings within small linear settlements; and
- Overall strong sense of tranquillity and sense of place.

10.49 Due to the Site being located beyond this landscape type and not regularly displaying its characteristics, this landscape type is not identified as a landscape receptor to be assessed further.

Thaxted Farmland Plateaux LCA

10.50 This landscape type encompasses the countryside east of the Site starting at a distance of >500m and lies outside the identified ZTV and primary visual envelope identified during Site visits.

10.51 Its key characteristics are identified as follows:

- Gently rolling plateau, almost flat in some areas, incised by the River Pant and the River Chelmer;
- Broken hedgerows evident; absence of hedgerows due to agricultural intensification;
- Expansive views on open roads at higher elevations;
- Settlements dispersed across the landscape;
- Rich architectural detail in the historic market town of Thaxted, with vernacular of colour washed plaster, half-timber, thatch, and pegtile roofs and some decorative pargetting; and
- Stansted flight paths have severely altered tranquillity in this area.

10.52 Due to the Site being located beyond this landscape type and not regularly displaying its characteristics, this landscape type is not identified as a landscape receptor to be assessed further.

Local Landscape Character

Topography and Hydrology

10.53 The Site sits at the junction between the upper valley sides of the River Cam and the gently rolling Boulder Clay/Chalky Till plateau landscape to the east (see Figure 10.3 in **Appendix 10.1**). The boulder clay is frequently incised by narrow streams creating localised undulations in the landscape. The result is a sloping Site (sloping from a high point of circa 105m AOD in the south-eastern corner to a low point of circa 75m AOD in the north-western corner) set within a wider local landscape that has an undulating form.

10.54 The runoff from the Site falls northwestwards towards the B1053 Radwinter Road and is collected in a watercourse at the boundary of the smaller Site field and is structured by a tall hedgerow ditch. The watercourse originates at Pounce Hall to the east and terminates at Turnip Hall Farm.

Land Use

10.55 The Site is composed of two agricultural fields located south of Radwinter Road, set within the agricultural landscape between Saffron Walden and Sewards End. The northern field is small

(approximately 1.3 hectares) and rectangular in form. In contrast, the southern field is very large (approximately 15.5. hectares) and irregularly shaped. Both fields are defined by mature tree belts.

10.56 An analysis of the key characteristics of the Site and its immediately surrounding landscape, and how this has evolved over time, is shown on Figures 10.4 to 10.6 in **Appendix 10.1**. This demonstrates that historically, the Site has formed part of the agricultural landscape between Saffron Walden and Sewards End, but over time the separation between the two settlements has been eroded by both expansion of residential development on the edge of Saffron Walden and Sewards End. Most recently, planning approval of residential development to the south of Radwinter Road (see Figure 10.6 in **Appendix 10.1**) has further expanded the residential land use, with a resultant erosion of the rural character of the landscape between Saffron Walden and Sewards End.

10.57 Historically, the agricultural landscape has been made up of a combination of field sizes and shapes including both large and irregularly shaped fields, such as the southern field within the Site, as well as smaller, rectilinear fields. Analysis of the field patterns from 1898 (Figure 10.4 in **Appendix 10.1**) against the present-day field pattern of the Site demonstrates a consistency of size and shape. In the present day, fields south of the Site are of a comparable size and shape to that of the larger field of the Site, but historically this wasn't the case. The larger field pattern has been created by loss of hedgerow during the 20th century.

Existing Settlement

10.58 With the exception of an agricultural barn within the Site, there is no built form within the Site itself, land use being arable fields. As demonstrated by the analysis of historic mapping (Figures 10.4 and 10.5 in **Appendix 10.1**), in the recent past, the landscape immediately surrounding the Site was similarly undeveloped arable fields, with scattered farmsteads being the only built form typical, outside of Sewards End to the east and Saffron Walden to the west. However, as demonstrated by Figure 10.6 in **Appendix 10.1**, consented planning schemes to the immediate west of the Site (which in the case of the closest development (UTT/13/3467/OP), is now largely constructed and occupied), have extended the edge of Saffron Walden into the landscape west of the Site.

10.59 The rural character of the landscape between Saffron Walden and Sewards End has been eroded by the expansion of both settlements, into the agricultural landscape. Frequent views to residential development (including schemes under construction), in conjunction with other land uses typical of a peri-urban environment, have eroded the rural character of the Site's immediate setting.

Existing Vegetation

10.60 As shown on Figure 10.6 in **Appendix 10.1**, existing vegetation patterns within the Site and immediately surrounding are defined by mature tree belts. Tree belts typically separate the landscape into medium to large scale, irregularly shaped fields. Exceptions do exist however e.g. the small, rectangular field in the north of the Site.

10.61 All field boundaries within the Site are vegetated by tall unmanaged indigenous hedge and mature tree planting. On lower areas these form dense belts of thicket type vegetation offering strong buffers and visual screening. Along Radwinter Road the Site boundary vegetation combines with that on the adjacent side of the road to create a strong vegetated road corridor 15-20m+ thick and with a number of veteran trees. On higher land in the southern part of the

Site, these unmanaged hedges start to break up and take the form of wind swept gappy tree belts, allowing visual permeability to the south.

10.62 Woodland blocks of variable sizes are also a characteristic feature e.g. the large (for the immediate locality) Pounce Wood north of the Site and the smaller copses south of Shire Hill Farm.

Movement

10.63 Key movement routes of the wider study area are shown on Figure 10.9 in **Appendix 10.1**.

10.64 The B1053 Radwinter Road runs along the northern boundary of the Site and links Saffron Walden to Sewards End and beyond. It has a densely vegetated sunken lane character and meanders up the valley with some sharp bends that restrict long or wider views.

10.65 A footpath runs alongside the road, initially as a highway footpath before splitting from the road, at the current Site entrance, as a PROW footpath (315_21) on an elevated bank on the northern side. Vegetation has grown up either side and joined to create a pleasing vegetated tunnel. As it come into Sewards End it drops down again to join the highway as an asphalt footpath.

10.66 A further PROW footpath (315_22) starts at the existing Site entrance and zigzags up higher ground on the south facing valley side through the back of Sewards End.

10.67 Further afield there is a good network of PROW's and informal tracks that follow valley bottoms and ridgetops. Most notably the Harcamlow Way runs along a high ridgeline to the southwest, through Saffron Walden, and along a high ridgeline approximately 1km to the north of the Site.

Existing Baseline Conditions - Visual Amenity

10.68 A Bare Earth Zone of Theoretical Visibility Model (ZTV) was run, to understand the likely visibility of the Site based upon the topography of the Site and surrounding 3km study area (see Figure 10.8 in **Appendix 10.1**). The ZTV doesn't take account of visual screening provided by intervening vegetation or built form, but provides a basis on which to understand likely visibility. Figure 10.10 in **Appendix 10.1** shows a refined primary visual envelope, based upon the findings of the field assessments.

10.69 On the basis of the ZTV, thirteen representative viewpoints were (see Figure 10.8 in **Appendix 10.1** identified to understand the baseline views experienced by sensitive visual receptors in the 3km study area. The viewpoints were grouped together based on geographical location and type of receptors. The groups are as listed in **Table 10.6:**

Table 10.6: Visual Receptor Groups

Group 1: Views from Radwinter Road, north-west and north-east of the Site	Viewpoint 1 Viewpoint 2
Group 2: Views from the PRoW network north of Radwinter Road, which connect the road to Sewards End	Viewpoint 3 Viewpoint 3a
Group 3: Users of PRoW south of the Site	Viewpoint 4 Viewpoint 5 Viewpoint 9 Viewpoint 10

Group 4: Views from Saffron Walden Conservation Area and immediate surroundings	Viewpoint 6 Viewpoint 12
Group 5: Views from the Harcamlow Way, north west of the Site.	Viewpoint 7 Viewpoint 7a
Group 6: Views from PRoW on the farmland clay plateau north-east of the Site	Viewpoint 8 Viewpoint 13
Group 7: Longer range views from Beechy Ride PRoW, south-west of the Site.	Viewpoint 11

10.70 Each viewpoint was visited, and the baseline view experienced by these receptors is presented in **Appendix 10.3**). On the basis of the views experienced at each viewpoint, and a greater understanding of the local topography, built form and layers of vegetation providing screening, it was identified that the following visual receptors would experience no change to the view. Neither the construction activity or completed development on the Site would become a feature of the view and there would be No Significant effects as a result. On this basis, the following visual receptors are not considered further by this assessment:

- Group 3: Views from PRoW on the farmland clay plateau south of the Site;
- Group 4: Views from Saffron Walden;
- Group 6: View from PRoW on the farmland clay plateau north-east of the Site; and
- Group 7: Views from Beechy Ride PRoW, south west of the Site.

Landscape and Visual Receptors Scoped into the Assessment

10.71 Based on the findings of the baseline landscape and visual context, the following receptors have been scoped into the assessment:

Landscape Receptors Scoped into the Assessment

- Landscape elements and resultant landscape patterns;
- Local Landscape Character (as shown on Figure 10.6 in **Appendix 10.1**);
- Sewards End settlement identity; and
- Cumulative Effects on Local Landscape Character (see assessment under 'Cumulative Effects' heading.

Visual Receptors Scoped into the Assessment

- Group 1: Views from Radwinter Road, north-west and north-east of the Site;
- Group 2: Views from PRoW network north of Radwinter Road which connect the road to Sewards End;
- Group 5: Views from the Harcamlow Way, north west of the Site; and
- Cumulative effects on visual receptors represented by Groups 1, 2 and 5.

Landscape Receptor Sensitivity

10.72 A combination of existing landscape character assessments, and fieldwork, provide an appropriate landscape character baseline for the Site.

10.73 The Site is a small component of the Cam River Valley LCA (A1) and forms part of its extreme

eastern slopes characterised by large-scale landscape of primarily arable fields, gappy hedgerows, drainage ditches, and occasional trees, with views from higher ground. The published Uttlesford Landscape Character Assessment judges the wider Cam Valley LCA as having a High Sensitivity. However, very little of the valued historic/landscape and ecological designations present within the wider LCA are located on or near the Site.

10.74 The Site is a small component of the Debden Farmland Plateaux LCA at its most northern narrow tip but shares many of its key characteristics being a large-scale irregular arable field framed by dense patches of woodland and gappy hedgerows, rolling landform with more exposed higher ground affording panoramic views, as well as key views to St Mary's Church in Saffron Walden. The published Uttlesford Landscape Character Assessment judges the Debden Farmland Plateau LCA as having a High Sensitivity. However, very little of the valued historic/ landscape and ecological designations present within the wider LCA are located on or near the Site.

10.75 The landscape of the Site and its immediate surroundings are mainly composed of a large and sloping intensively farmed fields structured by hedgerows of varied strength. The rural character of the landscape between Saffron Walden and Sewards End has been eroded by the expansion of both settlements, into the agricultural landscape. Frequent views to residential development (including schemes under construction), in conjunction with other land uses typical of a peri-urban environment e.g. the CLH, busy road networks, pylon routes) creates a peri-urban character. For the purposes of this LVIA, the Local Landscape Character is, therefore, judged to have a Medium susceptibility and Medium value, resulting in a Medium sensitivity to the change proposed. The landscape elements and resultant landscape patterns are an element of the Local Landscape Character and are also judged to have a Medium susceptibility and Medium value, resulting in a Medium sensitivity to the change proposed (see **Table 10.7**).

10.76 Sewards End is located approximately 0.8 km (see Figure 10.8 in **Appendix 10.1**) to the east of the existing settlement edge of Saffron Walden. It is a linear settlement, centred on Radwinter Road, but with additional development off Redgates Lane and Cole End Lane. Although located less than a kilometre from Saffron Walden, it is experienced as a separate settlement. When within the settlement itself, views out are limited and constrained by built form and vegetation cover. Saffron Walden is not a feature of views from within the settlement.

10.77 Sewards End is separated from Saffron Walden by Radwinter Road. The approach to Sewards End, from Saffron Walden, along Radwinter Road, is along a narrow but busy road lined on both sides by tree belts. Glimpsed views through the tree belt are occasionally experienced by users of Radwinter Road when travelling between Saffron Walden and Sewards End. Views are typically to the agricultural fields, although the CLH Site is also visible. The separate identify of Sewards End, and separation with Saffron Walden is also experienced from the PRoW network to the south west of Sewards End. Views from PRoW 315_22 are across agricultural fields, but the existing edge of Saffron Walden is clearly visible from more elevated parts of the path network (see Viewpoints 3 and 3a, **Appendix 10.3**). The identity of Sewards End as a settlement distinct from Saffron Walden is judged to be Medium-Low.[5]

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5 This methodology for assessing settlement separation and identity using both spatial criteria (by measuring the gap) and visual (by testing the visual separation of settlements experienced by people moving between them) is as advised by the Planning Advisory Service (at page 6 under preventing neighbouring towns from merger https://www.local.gov.uk/sites/default/files/documents/green-belt-244.pdf). This approach has separately been upheld as the correct approach at Planning Appeals dealing specifically with the separation of settlements - see paragraphs 25 and 27 in particular of a planning appeal at Tamworth in 2017 http://planning.northwarks.gov.uk/portal/servlets/AttachmentShowServlet?ImageName=310441

Table 10.7: Landscape Receptor Sensitivity

RECEPTOR GROUP	REPRESENTATIVE VIEWPOINT	SUSCEPTIBILITY	VALUE	OVERALL SENSITIVITY
Group 1: Views from Radwinter Road, north-west and north-east of the Site	Viewpoint 1 Viewpoint 2	Low	Low	Low
Group 2: Views from the PRoW network north of Radwinter Road, which connect the road to Sewards End.	Viewpoint 3 Viewpoint 3a	Medium-High	Medium-High	Medium-High
Group 5: Views from the Harcamlow Way, north west of the Site.	Viewpoint 7 Viewpoint 7a	Medium-High	Medium-High	Medium-High

Visual Receptor Sensitivity

10.78 A full assessment of sensitivity of visual receptors is included in Appendix 10.3 (including an assessment of susceptibility and value). A summary of the sensitivity of visual receptors scoped into the assessment is provided in **Table 10.8.**

Table 10.8: Visual Receptor Sensitivity

RECEPTOR GROUP	REPRESENTATIVE VIEWPOINT	SUSCEPTIBILITY	VALUE	OVERALL SENSITIVITY
Group 1: Views from Radwinter Road, north-west and north-east of the Site	Viewpoint 1 Viewpoint 2	Low	Low	Low
Group 2: Views from the PRoW network north of Radwinter Road, which connect the road to Sewards End.	Viewpoint 3 Viewpoint 3a	Medium-High	Medium-High	Medium-High
Group 5: Views from the Harcamlow Way, north west of the Site.	Viewpoint 7 Viewpoint 7a	Medium-High	Medium-High	Medium-High

Evolution of the Baseline Conditions without development

10.79 If the Site is not developed, either as a result of this planning application or any other, then the Site is likely to continue in active agricultural use. Existing landscape management regimes and techniques are likely to continue, and the land is likely to continue to be used for growing crops. The adjacent tree belts are likely to remain in place, managed to a similar height and condition as existing.

Prediction and Evaluation of Impacts

10.80 This section describes the likely predicted impacts of the Proposed Development on the landscape receptors and visual amenity during both the construction phase and the operational phase. Operational Effects are assessed at a time period of one-year post completion of construction. It assumes implementation of the primary mitigation measures which have been designed into the Proposed Development and are an inherent element of it. For the purpose of the assessment of operational effects it is assumed that the landscape planting will have been implemented but not yet matured. **Table 10.9** under the 'Mitigation' heading provides information about the assumed height of planting at both one year and year 15 (assessed under 'Residual Effects').

Construction Phase (Temporary)

10.81 The predicted impacts of the Proposed Development on landscape receptors and visual amenity during construction will arise from activities and processes being carried out on the Site over an anticipated construction period of 7 years from 2023.

10.82 Changes to the landscape resource and visual amenity during the construction phase are likely to include the following:

- Creation of access to the Site and temporary roads;
- The protection of trees to be retained;
- Stripping of topsoil and earth movements;
- Removal of hedgerows and trees (for access);
- Stockpiles and material storage areas;
- Mobile construction plant such as excavators and lorries;
- Site compound(s), utilities and protective hoardings;
- The presence of partially constructed buildings; and
- Increase in movement of plant and other traffic.

10.83 Various method statements and strategies will be prepared to ensure surrounding landscape features and habitats are protected and the impacts on visual amenity are minimised (such as arboricultural and construction environmental management plans). This can be controlled via planning condition.

10.84 Mitigation proposed for the construction phase is detailed below. In assessing Predicted Impacts, it has been assumed that this mitigation will have been implemented.

10.85 The key impacts of the proposed change to the landscape resource at construction are set out in detail at **Appendix 10.2** and are summarised below.

10.86 In respect of landscape elements and landscape patterns, one key landscape element of the Site (agricultural fields) will be lost. However, removal of trees and hedgerow is limited to short sections of tree belt on the northern and southern boundaries of the northern field meaning that the existing landscape pattern of the Site will remain largely unchanged. The size and scale of the change (and therefore the magnitude of effect) is **Medium-High**. As a result, the overall significance of effect is also **Moderate/Major Adverse** and is judged to be **Significant**.

10.87 In respect of landscape character, the baseline determined that the Site is not a prominent part of either of the District Scale Landscape Character Areas within which it falls (A1 Cam River Valley and B7 Debden Farmland Plateau) and would not result in any noticeable change to the District wide characteristics and features. As such, local character has been assessed at the local landscape scale (area shown on Figure 10.6 in **Appendix 10.1**). It is concluded that the loss of agricultural fields, and introduction of uncharacteristic materials, construction equipment and levels of activity, will result in a **Medium** magnitude of change during the construction phase. As a result, the overall significance of effect is **Moderate Adverse** and **Not Significant.**

10.88 In respect of the settlement identity of Sewards End, a separation distance of 0.25km will be retained between Sewards End and the closest area of proposed construction activity on the Site (see Figure 10.8 in **Appendix 10.1**). Construction activity associated with the Proposed Development will not be experienced from within the settlement itself. However, it will be experienced on the approach to Sewards End from Saffron Walden, and when using PRoW 315_22, to walk between Sewards End and Saffron Walden. The experience of arriving in Sewards End along Radwinter Road, will be altered by the removal of a length of tree belt approximately 130 metres long, and glimpsed and partial views of the construction activity beyond. Construction activity will have an urbanising impact on a short section of the road, and this will extend the built form character experienced along the road, into the adjacent countryside. Construction activity will also be experienced from PRoW 315_22, to the south west of the settlement. It will be experienced as the loss of agricultural fields, and introduction of uncharacteristic materials, construction equipment and levels of activity. Overall, as a result of changes to the experience of travelling between Saffron Walden and Sewards End, there will be a **Low** magnitude of change during the construction phase. As a result, the overall effect is **Minor Adverse** and **Not Significant**.

10.89 In respect of visual impacts, the key impacts at construction are set out in detail at **Appendix 10.3** and are summarised below.

10.90 Following review of the baseline against the emerging design proposals, only three of the original seven visual receptor groups were carried forward to the assessment of Predicted Impacts Stage, as set out below. It was concluded that all other receptor groups would experience no change, or such minimal change that the magnitude of change would be no more than Low and result in impacts that are Not Significant.

10.91 **Group 1**: Radwinter Road connects Sewards End in the east, with The Common in Saffron Walden to the west. In total it is approximately 2.25 kilometres long. For much of this 2.25 kilometres, users of Radwinter Road experience no change as a result of the proposed construction activity. Much of the tree planting along Radwinter Road, which is present in views experienced between Sewards End and Saffron Walden, is located outside the red line boundary of the Proposed Development. Approximately 130 lin. metres of vegetation along the southern edge of Radwinter Road will need to be removed to facilitate access to the proposed Site. Views of this vegetation removal will be visible to receptors using a short section of the

road (approximately 200 metres long). The removal of vegetation will open up views into the Site, and oblique and partial views of the proposed construction activity will be experienced. While for much of the route, the Proposed Development will result in no change to the view (as demonstrated by Viewpoints 1 and 2, **Appendix 10.3**) in recognition of the change that will be experienced by receptors for a short section of the road, the magnitude of change is judged to be **Low**. As a result, the overall significance of effect is judged to be **Minor Adverse** and **Not Significant**.

10.92 **Group 2** includes users of the PRoW network north of Radwinter Road, connecting the road to Sewards End. Viewpoints 3 and 3a (**Appendix 10.3**) were identified to demonstrate the kinetic nature of views experienced from the Site. Along the more elevated parts of the PRoW (as represented by Viewpoint 3), receptors experience panoramic views over the top of intervening vegetation, to experience largely uninterrupted views of the Site and the proposed construction activity. The views will, however, be experienced at a distance of approximately 500m, and will not dominate the view. Construction activity will be viewed adjacent to the existing Linden Homes Site, which although now largely complete, is still in parts a construction site.

10.93 From Viewpoint 3a, on slightly lower lying land, views over the intervening treetops are not possible and the magnitude of change during summer months will be Negligible. During winter months it is possible that glimpsed and partial views may be experienced. Overall, this receptor group is judged to experience a **Medium** magnitude of change. As a result, the overall impact to this receptor group with a Medium-High sensitivity, will be **Moderate Adverse** and **Not Significant.**

10.94 **Group 5** covers views experienced by users of the Harcamlow Way, on elevated land to the north-west of the Site. Two viewpoints have been identified (Viewpoints 7 and 7a, **Appendix 10.3**). While views from linear routes such as PRoW are kinetic and constantly changing, the two viewpoints demonstrate that the Site continues to be a prominent feature of views along a stretch of PRoW approximately 1km long. The Site is visible on the opposite side of a localised valley. Saffron Walden is visible within the view, including partially visible built form on the valley floor (e.g. newly constructed built form along Radwinter Road and the CLH Site) and more visually prominent features on the top of the valley sides (including the recently constructed Linden development). In baseline views of the Site, it is viewed as part of the agricultural and wooded setting of Saffron Walden. Construction activity would be viewed as an uncharacteristic element and would result in a **Medium-High** magnitude of change. As a result, the overall impact to this receptor group with a Medium-High sensitivity, will be **Moderate/Major Adverse** and is judged to be **Significant.**

Completion (One Year Post Completion)

10.95 On completion, the Proposed Development will introduce several permanent changes to the landscape and visual amenity. The predicted impacts of the Proposed Development during the operational phase will be of a permanent nature.

10.96 Changes to the landscape resource and visual amenity during the operational phase will include the following:

1) Introduction of a residential development as described in Chapter 4;
2) Loss of agricultural land;
3) Partial loss of boundary vegetation for road access;

4) Introduction of a strong Green Infrastructure, including; the retention of existing tree belts with supplementary public open space and associated tree, shrub and meadow planting and new play and sports provision (see Figure 10.12 in **Appendix 10.1**);

5) Lighting of roads (albeit with a lowland 'no lighting strategy' applied where possible); and

6) The provision of new pedestrian and cycle links through the development.

10.97 The key impacts of the proposed change to the landscape resource at operation is set out in detail at **Appendix 10.2** and is summarised below.

10.98 In respect of landscape elements and landscape patterns, one key landscape element of the Site (agricultural fields) will be lost. However, although the agricultural land use will be lost, as part of the Site's Green Infrastructure Strategy, areas of meadow and wetland will be created which will share similar characteristics (undeveloped and open aspect so that views to other surrounding landscape elements are retained). This will ensure that open, undeveloped space around prominent tree belts will be retained, so that the landscape pattern they create remains evident. Removal of trees and hedgerow is limited to short sections of tree belt on the northern and southern boundaries of the northern field. The size and scale of the change (and, therefore, the magnitude of effect) is **Medium.** The overall effect is **Moderate Adverse** and **Not Significant**.

10.99 In respect of landscape character, residential development on the Site will result in the extension of the residential character present in the local area, and an erosion of the rural character. However, despite the change from an agricultural land use to a residential land use, the Site will include landscape features (both existing retained and new additions) which are typical of the local area and which will help to assimilate the Proposed Development. Assuming integration of the primary mitigation measures detailed in the Mitigation section below are implemented, the magnitude of change will be **Medium-Low** resulting in a **Moderate-Minor Adverse** overall effect, which is **Not Significant.**

10.100 In respect of the settlement identity of Sewards End, a separation distance of 0.25km will be retained between Sewards End and the new settlement edge of Saffron Walden (see Figure 10.8 in **Appendix 10.1**). The landscape forming the separation will be retained as agricultural fields. It is judged that the Proposed Development will not be visible from within the settlement of Sewards End. In terms of the experience of arriving in Sewards End, views of the Proposed Development will become part of the experience of travelling along Radwinter Road and using PRoW 315_22. Mitigation has been designed into the scheme to ensure that the proposed built form isn't a prominent feature of views from Radwinter Road (retention of much of the tree belt along Radwinter Road, retention of the small most northerly field as public open space and creation of a new tree belt along the eastern boundary of the Site). However, the new access road to the development will become a feature of views from Radwinter Road when travelling between Sewards End and Saffron Walden. Users of PRoW 315_22, to the south west of the settlement will experience views of the Proposed Development. Receptors using the more elevated sections of the PRoW (as represented by Viewpoint 3) will experience views of the completed development in the middle distance, adjacent to recently constructed housing at the Linden development. The 0.25km separation distance and retained agricultural fields will, however, be visible and will help to define Sewards End as separate to and distinct from Saffron Walden. The Proposed Development will be visible as new housing set within a network of public open spaces and green corridors.

10.101 Overall, as a result of changes to the experience of travelling between Saffron Walden and Sewards End, there will be a **Low** magnitude of change during the operational phase. As a result, the overall effect is **Minor Adverse** and **Not Significant**.

10.102 The key impacts of the proposed change to visual amenity at operation stage is set out in detail at **Appendix 10.3** and is summarised below.

10.103 **Group 1**: Once the Proposed Development is completed, users of Radwinter Road will continue to experience unchanged baseline views along much of the road (as demonstrated by Viewpoints 1 and 2). However, for a short section of the road in the vicinity of the Site, views of the newly constructed access road will be visible. It is also possible that glimpsed and partial views of the rooftops of development within the Site could be experienced. The magnitude of change is judged to be **Low**. As a result, the overall significance of effect is judged to be **Minor Adverse** and **Not Significant**.

10.104 **Group 2**: Receptors using the more elevated sections of the PRoW (as represented by Viewpoint 3) will experience views of the completed development in the middle distance, adjacent to recently constructed housing at the Linden development. The Proposed Development will be visible as new housing set within a network of public open spaces and green corridors. Most relevant to receptors of this view will be the proposed public open space in the south-eastern part of the Site. This will ensure that the most visible part of the Site will not contain development.

10.105 As for the construction phase, receptors on lower lying land (as represented by Viewpoint 3a) will experience no change during summer months. During winter months it is possible that glimpsed and partial views may be experienced. Overall, as a result of the primary mitigation designed into the Proposed Development, this receptor group is judged to experience **Medium/ Low** magnitude of change. As a result, the overall impact to this receptor group with a Medium-High sensitivity, will be **Moderate/Minor Adverse** and **Not Significant.**

10.106 **Group 5:** As demonstrated by Viewpoints 7 and 7a, receptors will experience distant, but panoramic views towards the Site and the landscape east of Saffron Walden more generally. The Proposed Development will be viewed as an extension of the residential land use (Linden Homes Development) into the adjacent rural landscape. Once the Proposed Development is completed, however, and the primary mitigation measures proposed have been implemented, residential development will only be visible on the lower lying slopes. The proposed public open spaces on higher ground in the south east of the Site will create a sensitive transition between the residential development and the wider rural landscape. As a result of the extension of residential development visible, but within a landscape setting that provides public open space in the most visually sensitive part of the Site (vegetation yet to mature) there will be a **Medium-High** magnitude of change. As a result, the overall impact to this receptor group with a Medium-High sensitivity, will be **Moderate/Major Adverse** and is judged to be **Significant.**

Mitigation

10.107 The development has evolved through the iterative process of assessment and masterplanning and has sought to minimise environmental impacts as far as possible with the integration of the EIA process alongside the masterplan evolution.

10.108 Primary (inherent) mitigation has been provided to try and avoid or (where avoidance is impractical) minimise the identified potential impacts of the development on the Site and

surrounding area at completion (which are identified below with reference to the Landscape Framework Plan – see Figure 10.12 in **Appendix 10.1**). The following measures will be embedded within the Proposed Development through the approval of the submitted parameter plans/masterplan framework and/or appropriate conditions requiring control of these aspects during the preparation of any subsequent reserved matters.

- The existing field patterns, size, and shape is retained along with the tall tree belts along the field boundaries;
- Woodland blocks on or around to ridgelines for screening and views;
- Open ground on higher landform to the south east with expansive views to the town and countryside / view corridors towards local landmarks such as St Mary's church and Pounce Wood;
- Landscape and Green Infrastructure design has been central to the design of the Proposed Development. Proposed open spaces, green links and areas of habitat creation are shown on Figure 10.12 in **Appendix 10.1**. The landscape and Green Infrastructure elements shown represent 55% of the Site;
- SuDS features to mark the entrance of the Site at the lower part of the Site with potential reference to historic local landscape features, such as moats;
- Green corridors have been created, linking the public open space on high ground in the south east, with the public open space in the retained field on the northern Site boundary. The green corridors are designed to have a semi-natural character and will be designed to enhance biodiversity and create new habitats;
- The eastern parcel will be well integrated into landscape to provide a sensitive transition to the rural areas. Built form will drop in height to 1.5 storeys. Tree belts set within a semi-natural landscape will feather into the development, softening the built edge;
- Sustainable urban drainage is 'designed in' to the Proposed Development. Design references are taken from the moats which are found within the locality;
- Low level lighting will be adopted for all green corridors and outer edges of the Proposed Development to help assimilate the Proposed Development into the night-time context and protect dark skies;
- Street trees are promoted within the street typologies proposed - further increasing biodiversity whilst also improving air and environmental quality; and
- New footpath routes have been established to link the Proposed Development to footpaths in the surrounding area. The connection between an east-west green link within the Site and PRoW 315_22 will provide an enhanced off-road path, meaning that walkers don't need to walk along the busy Radwinter Road.

10.109 For the purposes of assessing impacts and resultant effect on landscape and visual receptors, at the Operational Stage (Completion +1year) it has been assumed that the proposed landscape planting will be in place but not yet matured. An assessment of the impacts and resultant impacts on landscape and visual receptors once planting is matured, is made under the heading 'Residual Impacts' at a time period 15 years post construction.

10.110 In assessing the mitigation potential of the proposed landscape planting, the following heights have been assumed (see **Table 10.9**).

Table 10.9: Assumed Planting Height

PLANTING	ASSUMED SPECIFICATION	ASSUMED HEIGHT AT YEAR 1	ASSUMED HEIGHT AT YEAR 15
Trees planted in woodland copses and tree belts	Trees and shrub understory on a staggered 1 x 1.5m matrix, trees - 3m spacings. Shrubs planted at 40-60cm. Trees planted 50:50 as feathered (3m high) and extra heavy standard (14-16cm 4.25-4.5m high).	Shrub understory approx. 1 m. Trees approx 3.5-4.5 m. *	Understorey approx. 7 m. Trees approx 9.5 m.
Street Trees	Trees planted as extra heavy standard (14-16cm 4.25-4.5m high).	Approx 4.5 m *	Approx. 9.5 ms
* Extra Heavy Standard Trees - assumes no increase in height in first two years.			

Construction Phase

10.111 The following mitigation measures are proposed to minimise the impact on the visual amenity and landscape character and resource during construction:

- The protection of trees and hedgerows to be retained (except for access purposes);
- The positioning of stockpiling and compounds within less visually sensitive areas; and
- Early implementation of edge structure planting.

**The above measures can be controlled and enforced through appropriately worded planning conditions, requiring the preparation of a CEMP, Landscape Management Plans and tree protection measures.*

Residual Effects

10.112 Following the implementation of the mitigation measures, in accordance with Figure 10.12 in **Appendix 10.1**, the likely residual effects on the landscape resource and visual amenity will be assessed in the context of further mitigating factors, including:

- Maturity of new buffer/woodland planting (up to 15 years being up to ~11m height);
- The establishment of proposed landscaping and hedgerows and;
- The 'weathering' of building materials.

10.113 As set out below, only visual receptors in Group 5 (users of Harcamlow Way) are judged to experience **Moderate Adverse** effects which are Not Significant, at the residual stage (15 years post completion). All other receptors will experience **Minor Adverse** effects or lower.

10.114 The Landscape Resource Schedule (**Appendix 10.2**) provides a detailed assessment in tabular format which provides a concise and transparent process determining the effects for each landscape receptor, from which the key conclusions are extracted below.

10.115 The mitigation measures set out with this chapter will help to reduce adverse effects to the landscape elements of the Site and surrounding Local Landscape Character. Residential development on the Site will result in the extension of the residential character present in the local area, and an erosion of the rural character. As noted at the Operational Phase (completion + 1 year) although the change from an agricultural land use to a residential land use, will result in a level of change to the Local Landscape Character, the Proposed Development includes a Green Infrastructure Framework which will introduce landscape features which are typical of the local area and which will help to assimilate the Proposed Development. After 15 years, these landscape features will have matured to create a well-established, landscape framework in which the proposals sit. Approximately 55% of the Site is proposed as public open space, and as noted, within these spaces vegetation types typical of the local landscape will be introduced. In the baseline agricultural land use, this variety of landscape features and associated habitats is not present. The introduction of a rich network of varied, but typical landscape features will, therefore, have a benefit to the landscape elements and landscape patterns of the Site.

10.116 On this basis, the assessment of residual effects concludes that the Proposed Development will result in a **Minor Neutral** effect (**Not Significant)** on landscape features and overall landscape pattern of the Site**.** While the introduction of these elements will also have benefits to the Local Landscape Character, and at maturity will ensure the Proposed Development is well integrated to the Local Landscape Character, in recognition of the further erosion of the rural character east of Saffron Walden, the overall residual impact on the Local Landscape Character is judged to be **Minor Adverse** and **Not Significant.** While it is recognised that the rural character east of Saffron Walden will be eroded, and users of Radwinter Road will experience views of a residential character for a longer stretch when travelling between the two settlements, Sewards End will continue to be separate to, and distinct from Saffron Walden. A separation distance of 0.25 km (at the closest point between Sewards End and the proposed built development) will be retained. In addition, the eastern/southern part of the Site will be secured as public open space within a S106 Agreement. Although the Proposed Development will become a feature of views from PRoW 315_22, the separation provided by the 0.25km, the secured area of public open space, and the intervening retained agricultural land use, means that Sewards End will continue to be experienced as a separate settlement to Saffron Walden. It is judged that the settlement identity of Sewards End would experience a **Minor/Negligible Adverse** effect which would be **Not Significant.**

10.117 The Visual Amenity Assessment (refer to **Appendix 10.3**) provides a detailed assessment in a tabular format which provides a concise and transparent process determining the effects for each landscape receptor, from which the key conclusions are extracted below.

10.118 **Group 1**: Once the road is in place, and planting within the wetland area in the northern section of the Site has matured, any views of built form visible within the Site, will be viewed within the context of a mature landscape, composed of landscape elements typical of the local area. The magnitude of change will be **Negligible** and the overall effect **Not Significant**.

10.119 **Group 2**: Receptors using the more elevated sections of the PRoW (as represented by Viewpoint 3) will experience views of the completed development in the middle distance, within a mature landscape setting. The Proposed Development will be visible as housing set within a

network of public open spaces and green corridors containing mature landscape features typical of the area. While the landscape will be well integrated to its setting, the increased presence of residential development as a percentage of the wider view, and the resultant erosion of the rural character, will result in a **Low** magnitude of change. As a result, the overall impact to this receptor group with a **Medium-High** sensitivity, will be **Minor Adverse** and **Not Significant.**

10.120 **Group 5:** As for the assessment of impacts at one-year post completion, the Proposed Development will be viewed as an extension of the residential land use (Linden Homes Development) into the adjacent rural landscape. As a result of the primary mitigation designed into the Proposed Development, residential development will only be visible on the lower lying slopes. The proposed public open spaces on higher ground in the south east of the Site will create a sensitive transition between the residential development and the wider rural landscape. Planting within the proposed areas of open space will have reached maturity, resulting in a further improvement of the integration of Proposed Development to the view. There will be a **Medium** magnitude of change**.** As a result, the overall impact to this receptor group with a **Medium-High** sensitivity, will be **Moderate Adverse and Not Significant.**

Cumulative Effects

10.121 The following proposed developments were identified within the Scoping Assessment for assessment of cumulative effects. Those highlighted in bold are now largely constructed and at least partially inhabited. The location of these schemes is shown on Figure 10.11 in **Appendix 10.1**:

- **Land South of Radwinter Road UTT/16/1856/DFO and UTT/20/2007/FUL**;
- Land North of Shire Hill Farm (UTT/17/2832/OP);
- Land East of Thaxted Road (UTT/18/0824/OP &19/2355/DFO);
- **Land at Ashdon Road UTT/13/2423/OP**; **and**
- Land East of Little Walden Road (UTT/16/2210/OP).

10.122 All of these schemes have been granted planning permission and UTT/16/1856/DFO / UTT/20/2007/FUL and UTT/13/2423/OP are now largely completed and a feature of the Local Landscape Character and visual context. These are, therefore, a current feature of the existing baseline and have been assessed as such.

10.123 In respect of landscape effects, having considered the remaining planning applications, it is not judged that they will result in any difference in the assessment in the context of this cumulative baseline scenario. The erosion of rural character and encroachment of built form to the east of Saffron Walden, has already been noted in the existing baseline. Applications UTT/18/0824/OP and UTT/17/2832/OP, both also east of Saffron Walden, may lead to a further erosion of the rural landscape character, but these applications are located outside of the area considered as the Local Landscape Character and would not change the baseline Local Landscape Character relevant to the Site.

10.124 With regard to visual effects, the cumulative baseline similarly has no change to the visual effects identified, with the exception of Group 2 (Viewpoint 3, **Appendix 10.3**). Receptors within Group 2 have the potential to experience distant views of built form associated with application UTT/17/2832/OP. However, these views will be experienced at a distance of around a kilometre, against a backdrop of existing adjacent development within Saffron Walden. At this distance,

it is considered this change would have negligible impact on the view. As a result, the visual effects on this receptor would be negligible in a cumulative baseline scenario.

Monitoring

10.125 The majority of the mitigation proposed is primary mitigation, designed into the Proposed Development. It will be essential that this mitigation is incorporated to future detailed design. This can be controlled via planning condition.

10.126 Mitigation of effects on landscape elements and resultant landscape pattern requires that the majority of the existing tree belts are retained. Arboricultural Impact Assessments should be produced detailing the tree protection methods to be used, and this should also be controlled via planning condition.

Table 10.10: Summary of Impacts: Landscape and Visual

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Landscape Receptors												
Landscape elements and landscape pattern of the Site	Loc	Med	Construction Phase: Med-High One year post completion: Med	Adv	Irrev	ST	Construction Phase: Mod-Maj Adv One year post completion: Mod Adv	Although housing will replace the existing agricultural land use, the retention of the existing field boundaries will minimise the change to the landscape pattern. Introduction of characteristic landscape features to the Site (woodland blocks on high ground, SuDS features inspired by the shape and form of local moats, strengthening of existing tree belts with additional tree planting) will help to integrate the Site to the surrounding landscape character	Adv	Irrev	LT	Min Neu

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Introduction of uncharacteristic elements to the Site and impact upon local landscape character	Loc	Med	Construction Phase: Med One year post completion: Med-Low	Adv	Irrev	ST	Construction Phase: Mod Adv One year post completion: Mod - Min Adv	Although housing will replace the existing agricultural land use, the retention of existing landscape features along the Site boundaries, and introduction of landscape elements typical of the local landscape (woodland blocks on high ground, SuDS features inspired by the shape and form of local moats, strengthening of existing tree belts with additional tree planting) will minimise the impact of the introduced new housing	Adv	Irrev	LT	Min Adv
Settlement identity of Sewards End	Loc	Med	Construction Phase: Low One year post completion: Low	Adv	Irrev	ST	Construction Phase: Min Adv One year post completion: Min Adv		Adv	Irrev	LT	Min-Neg Adv

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Visual Receptors												
Group 1: Views from the North (Radwinter Road - Viewpoint 1 & 2)	Loc	Low	Construction Phase: Low One year post completion: Low	Adv.	Irrev	ST	Construction Phase: Min Adv One Year Post Completion: Min Adv	Tree planting along Radwinter Road is retained with the exception of tree removal to provide access. The small, linear field in the north of the Site is retained as open space, with adjacent hedgerow retained. The retained field boundaries will minimise views of proposed construction activity	Adv	Irrev	LT	Neg
Group 2 - Views from Footpaths to the north - Viewpoints 3 and 3.a)	Loc	Med-High	Construction Phase: Med One year post completion: Med/Low	Adv.	Irrev	ST	Construction Phase: Mod Adv One Year Post Completion: Mod/Min Adv	The most visible part of the Site is the southern portion, on the highest land. This area is retained as public open space and minimal construction activity will be undertaken Groups of trees are proposed within the public open space, referencing the characteristic visual feature of woodland blocks on hilltops	Adv	Irrev	LT	Min Adv

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Group 3: Views from PRoW to the south (Viewpoints 4, 5, 9 and 10)	Loc	Med-High	Neg	N/A	N/A	N/A	Neg	The proposed Site and mitigation would not be visible to these receptors	N/A	N/A	N/A	Neg
Group 4: View from western Saffron Walden on higher ground (Viewpoints 6 & 12)	Loc	Med-High	Neg	N/A	N/A	N/A	Neg	The proposed Site and mitigation would not be visible to these receptors	N/A	N/A	N/A	Neg
Group 5: Views from PRoW to the north-west of the Site (Viewpoints 7 & 7a)	Loc	Med-High	Construction Phase: Med-High One Year Post Completion: Med-High	Adv	Irrev	ST	Construction Phase: Mod/ Maj Adv One Year Post Completion: Mod/Maj Adv	The most visible part of the Site is the southern portion, on the highest land. This area is retained as public open space and minimal construction activity will be undertaken Boundary vegetation surrounding the Site will be retained, and will help to retain an element of continuity to views experienced	Adv	Irrev	LT	Mod Adv
Group 6: Views from PRoW to the north-east of the Site (Viewpoint 8 & 13)	Loc	Med-High	Neg	N/A	N/A	N/A	Neg	The proposed Site and mitigation would not be visible to these receptors	N/A	N/A	N/A	Neg

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Group 7: Views from Beechy Ride PRoW, south-west of the Site (viewpoint 11)	Loc	Med-High	Neg	N/A	N/A	N/A	Neg	The proposed Site and mitigation would not be visible to these receptors	N/A	N/A	N/A	Neg

Key:

Loc: Local	Med: Medium	Adv: Adverse	Min: Minor	Rev: Reversible	LT: Long Term
Neg: Negligible	Neu: Neutral	Maj: Major	Mod: Moderate	Irrev: Irreversible	ST: Short Term

Noise and Vibration

11

11.0 Noise and Vibration

Introduction

11.1 This chapter addresses the likely significant noise and vibration impacts of the Proposed Development. It has been prepared by Resound Acoustics Limited to assess the potential impacts of the Proposed Development in relation to the effects it would have on the noise and vibration climate.

11.2 This chapter is accompanied by the following appendices:

- Appendix 11.1: Introduction to Noise and Vibration;
- Appendix 11.2: Assessment Policy, Standards and Guidelines;
- Appendix 11.3: Environmental Noise Survey;
- Appendix 11.4: Construction Noise Assessment; and
- Appendix 11.5: Operational Noise Assessment.

Potential Impacts

11.3 Noise and vibration from construction works affecting off-site sensitive receptors are possible when the works are near those Site boundaries close to sensitive receptors.

11.4 The nature of construction is such that short-duration high noise levels are likely at times during the works, with possible adverse effects occurring should heavy ground engineering works be undertaken in close proximity to sensitive receptors.

11.5 Vibration from construction works is less likely to be perceptible as it is attenuated in the ground more effectively than noise is in air. However, it is possible that adverse effects could occur where works such as vibratory compaction are undertaken in close proximity to sensitive receptors.

11.6 There is potential for development-generated traffic to give rise to adverse noise effects at existing sensitive receptors away from the Site, particularly if the traffic from the Proposed Development combines with traffic from other consented schemes in the area.

11.7 Significant adverse effects from road traffic vibration are not considered likely and have, therefore, been scoped-out of the EIA.

11.8 In the absence of any significant noise or vibration sources in close proximity to the Site, it is considered that the Site is suitable for residential development and no significant adverse effects are likely. Consideration of the suitability of the Site for residential development is, therefore, scoped-out of the EIA.

Methodology

11.9 The potential magnitudes of impacts have been determined for the following aspects of the Proposed Development:

- The impact of noise and vibration from construction works have been predicted and assessed in accordance with the guidance set out in British Standard 5228: 2009+A1: 2014 *Code of practice for noise and vibration control on construction and open sites*; and

- Changes in road traffic noise levels along roads in the vicinity of the Site have been assessed for both the construction and long-term use of the Proposed Development. The traffic noise levels have been calculated in accordance with the *Calculation of Road Traffic Noise* (CRTN) and the impact of any changes assessed in broad accordance with Design Manual for Roads and Bridges (DMRB) LA 111 *Noise and vibration* (2020).

11.10 Summaries of the various policies, standards and guidance used in the assessment are set out in **Appendix 11.2**.

Determination of Magnitude of Impact

11.11 The magnitude of impact from the construction and operation of the Proposed Development have been considered against the potential subjective responses to noise set out in **Table 11.1**.

11.12 The magnitude of impact has been identified as either negligible, low, moderate or high, adverse or beneficial, according to criteria and guidance appropriate for each source.

Table 11.1: Determination of Impact Magnitude – Potential Subjective Responses

MAGNITUDE OF IMPACT	POTENTIAL SUBJECTIVE RESPONSES
High	The noise/vibration causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.
Moderate	Noise/vibration can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.
Low	A minor adverse change from baseline conditions. Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

11.13 The construction and operational impacts have been assessed using these definitions. The quantified impacts have been considered in terms of effects by taking account of the sensitivity of the affected receptor, and the duration of the impact.

Determination of Magnitude of Impact – Construction Phase

11.14 The predicted construction noise levels have been assessed against criteria derived using the 'ABC method' as described in Section E.3.2 of BS5228: 2009+A1: 2014 and summarised in **Appendix 11.2**.

11.15 The descriptions of subjective human responses in **Table 11.1** have been translated to construction noise magnitudes of impact in the following way, with reference to the criteria set out in Table A10.2.2 in **Appendix 11.2**:

- Exceeding the adopted criteria by more than 10dB constitutes a high magnitude of impact, irrespective of the duration;
- Exceeding the adopted criteria by less than 10dB for a period of more than one month constitutes a moderate magnitude of impact;
- Exceeding the adopted criteria by less than 10dB for a period of less than one month constitutes a low magnitude of impact; and
- Compliance with the adopted criteria constitutes a negligible magnitude of impact.

11.16 The duration of construction vibration is of less significance than it is for noise, since the vast majority of the construction works generating significant levels of vibration will be relatively short in duration. The magnitude of potential construction vibration impacts are categorised according to the vibration magnitude only, as follows:

- Any works causing a vibration level greater than 10mm/s (measured as a peak particle velocity) constitutes a high magnitude of impact;
- Any works causing a vibration level between 1mm/s and 10mm/s constitutes a moderate magnitude of impact;
- Any works causing a vibration level between 0.3mm/s and 1mm/s constitutes a low magnitude of impact; and
- Any works causing a vibration level less than 0.3mm/s constitutes a negligible magnitude of impact.

Determination of Magnitude of Impact – Operational Phase

11.17 The magnitude of impact of off-site operational road traffic noise has been determined in accordance with the thresholds set out in Tables A10.2.5 and A10.2.6 in **Appendix 11.2**, using the calculation methods set out in the CRTN.

Sensitivity of Receptor

11.18 The sensitivity of affected receptors to noise and vibration has been determined according to the scale set out in **Table 11.2**. The receptors themselves have been identified through a review of aerial photography and OS mapping.

Table 11.2: Determination of Receptor Sensitivity

MAGNITUDE OF IMPACT	DEFINITION OF MAGNITUDE
High	Hospitals (e.g. operating theatres or high dependency units), residential accommodation, private gardens, hospital wards, care homes, research facilities.
Medium	Schools, universities, national parks, during the day; and temporary holiday accommodation at all times including hotels.
Low	Offices, shops, outdoor amenity areas, canal towpaths, long distance footpaths, doctors surgeries, sports facilities and places of worship.
Negligible	Warehouses, light industry, car parks, agricultural land.

11.19 These receptor sensitivity categories apply to receptors for both the construction and operational phases of the Proposed Development.

Assessment of Significance

11.20 The magnitude of impact is correlated with the receptor sensitivity to determine the overall significance of the effect, in accordance with **Table 11.3.** An effect of moderate or major significance is considered significant in an EIA context.

Table 11.3: Determination of Significance of Effect

MAGNITUDE OF IMPACT	SENSITIVITY OF RECEPTOR			
	HIGH	MEDIUM	LOW	NEGLIGIBLE
High	Major	Moderate	Minor	None
Moderate	Moderate	Minor	Minor	None
Low	Minor	Minor	None	None
Negligible	None	None	None	None

11.21 Where significant adverse effects are identified, mitigation measures have been recommended to minimise the adverse effects of the Proposed Development. Any residual effects that may exist after mitigation has been applied are identified.

11.22 It is noted that there can be a distinction between any thresholds for identifying significant adverse effects in an ES in accordance with the EIA Regulations, and a significant observed adverse effect on health and quality of life, termed the Significant Observed Adverse Effect Level (SOAEL), which has a particular meaning in planning policy. This distinction has been made clear in recent infrastructure-based planning inquiries, and is enshrined in recently-published guidance on road traffic noise (LA111).

11.23 A significant adverse effect in an EIA context does not necessarily equate directly to an exceedance of the SOAEL in planning policy terms, and significant adverse effects should not be taken to mean that a particular policy threshold has been breached.

11.24 While the planning policies that give rise to the SOAEL, and the lowest level at which an adverse effect on health and quality of life occurs, or LOAEL, are summarised in **Appendix 11.2**, there are no numerical definitions in policy for these terms.

Geographical Scope

11.25 Direct effects from the construction of the Proposed Development on surrounding sensitive receptors have been assessed within an area approximately 500 metres from the Site boundary. However, in practice, the receptors closest to the Site will be the worst-affected, with noise and vibration levels reducing with increasing distance from the Site.

11.26 The geographical scope of the assessment of off-site road traffic noise impacts has been determined by the expected traffic dispersion patterns away from the Site and covers roads within approximately 2km of the Site.

Temporal Scope

11.27 The assessment has considered both the temporary effects that might result from the construction of the Proposed Development, and the short, medium and long-term effects associated with the use of the Proposed Development once completed.

Existing Baseline Conditions

11.28 The noise climate at the Site is influenced by road traffic noise, primarily from Radwinter Road which borders the northern edge of the Site.

11.29 A baseline noise survey of sound levels at the Site was undertaken in May 2021.

11.30 The measurements were undertaken at two locations, described as follows:

- Position 1: on the northern edge of the Site, close to Radwinter Road; and
- Position 2: on the western edge of the Site, close to the newly constructed residential area to the west.

11.31 The measurement locations are shown in **Figure 11.1**.

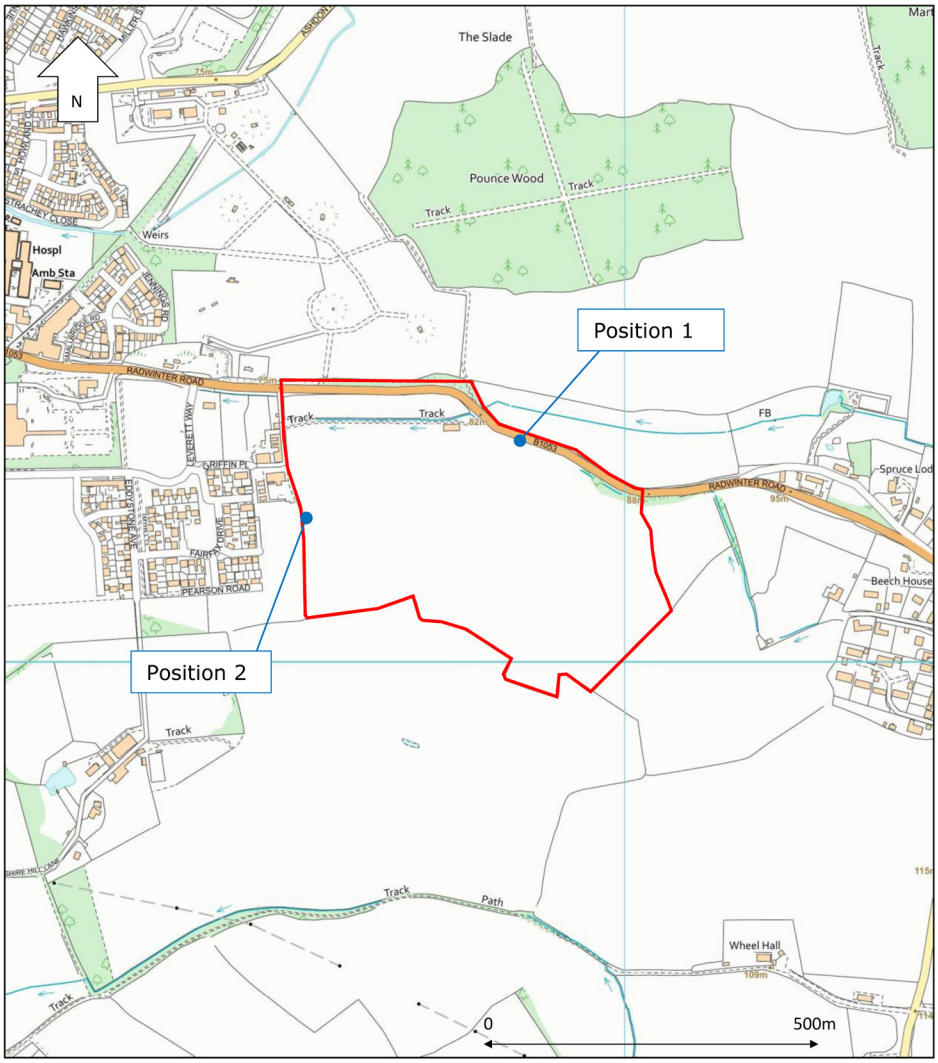

Figure 11.1: Noise Monitoring Locations

11.32 Details of the equipment used during the baseline survey, the dates and times of the measurements, and a summary of the prevailing weather conditions are set out in **Appendix 11.3**.

11.33 The baseline sound survey results are summarised in **Table 11.4** and **Table 11.5** for Positions 1 and 2 respectively, and set out in full in **Appendix 11.3**.

Table 11.4: Summary of Sound Levels Measured at Position 1, Free-Field dB

DATE	PERIOD	DURATION	$L_{AEQ,T}$	L_{A90} (1)	L_{A10} (1)	L_{AFMAX}
Wednesday 19th May 2021	Day	10 hours	64.5	39.4	67.0	71.8 to 88.9
	Night	8 hours	54.8	33.1	43.5	38.0 to 80.2
Thursday 20th May 2021	Day	16 hours	65.3	46.5	69.4	75.0 to 91.9
	Night	8 hours	58.6	48.6	61.1	64.5 to 84.5
Friday 21st May 2021	Day	6 hours	66.0	53.0	70.5	77.8 to 90.6
Note: (1) – The L_{A90} and L_{A10} values presented were calculated from the arithmetic mean of the $L_{A90,15min}$ and $L_{A10,15min}$ measurements for each period.						

Table 11.5: Summary of Sound Levels Measured at Position 2, Free-Field dB

DATE	PERIOD	DURATION	$L_{AEQ,T}$	L_{A90} (1)	L_{A10} (1)	L_{AFMAX}
Wednesday 19th May 2021	Day	10 hours	41.5	32.7	41.8	42.0 to 67.7
	Night	8 hours	38.3	27.3	34.7	35.0 to 73.1
Thursday 20th May 2021	Day	16 hours	45.8	39.8	47.0	50.7 to 71.8
	Night	8 hours	48.1	41.8	50.7	55.3 to 67.9
Friday 21st May 2021	Day	6 hours	49.7	43.8	52.0	57.1 to 69.6
Note: (1) – The L_{A90} and L_{A10} values presented were calculated from the arithmetic mean of the $L_{A90,15min}$ and $L_{A10,15min}$ measurements for each period.						

11.34 It is noted that the weather conditions from the afternoon of Thursday 20th May 2021, until the end of the survey were not suitable for noise measurement, with rain and high wind speeds. Therefore, the noise levels measured during this period have not been included in the assessment, although they are reported in **Tables 11.4** and **11.5**.

11.35 There is uncertainty in the baseline sound measurements due to the restrictions that were in place at the time of the survey, as part of the Government's response to the COVID-19 pandemic. The restrictions in place as part of this lockdown have the potential to alter road traffic flows and, therefore, road traffic noise levels.

11.36 It is likely that the influence of the Government restrictions, should there be any, will reduce road traffic noise levels; for the purposes of determining appropriate criteria for the assessment of construction noise, this will result in a more stringent criterion, which results in a robust assessment.

11.37 The assessment of operational off-site road traffic noise is based on traffic data provided by the traffic consultant for the Proposed Development, the evidence base of which has been agreed with the Local Highway Authority. The data provided was prior to the Covid-19 pandemic.

Evolution of the Baseline Conditions without Development

11.38 Without the implementation of the Proposed Development, the acoustic climate in the area is likely to remain similar, i.e. dominated by road traffic noise. Road traffic noise levels may change, depending on the number of vehicles using the roads surrounding the Site in the future. However, future baseline noise surveys would be required to confirm this.

Predicted Impacts

Construction

11.39 An assessment of the potential impacts of construction noise and vibration has been undertaken.

11.40 The construction works are anticipated to involve the following elements:

- Site preparation works, involving chain saws, excavators, dump trucks, loaders and lorries;
- Foundation works, involving concreting plant, poker vibrators, trucks and lorries;
- Building erection works, involving lorries, tracked cranes, poker vibrators, manual tasks such as hammering, nail guns and erection of scaffolding, generators and compressors; and
- Road surfacing and landscaping works, involving lorries, compaction plant, excavators and tarmacing plant.

11.41 It is assumed that piling is not required for the Proposed Development.

Assessment of Construction Noise

11.42 The items of plant assumed for each phase of construction works are set out in **Appendix 11.4**.

11.43 The calculations have been undertaken for two situations; an 'average' case where the construction plant are assumed to be at an average distance from receptors, and a 'worst-case' where the construction plant are assumed to be at the part of the Application Site closest to the receptor under consideration. The closest distance between construction works and a receptor for the 'worst-case' assessment is based on a minimum distance of 10 metres; it is highly unlikely that any construction plant items could physically be located closer than this to a receptor.

11.44 This gives a range of values representing the average and worst-case noise levels likely to be generated during the works.

11.45 Construction noise has been predicted at the receptor locations listed in **Table 11.6**, and shown in **Figure 11.2.**

Table 11.6: Distances Between Receptors and Construction Works (Metres)

RECEPTOR	SITE PREPARATION/ LANDSCAPING		FOUNDATIONS AND BUILDINGS		HARDSTANDING (ROADS AND PATHS)	
	CLOSEST	AVERAGE	CLOSEST	AVERAGE	CLOSEST	AVERAGE
Turnip Hall Farm	10	300	30	280	30	280
Pearson Road	70	340	80	290	80	290

RECEPTOR	SITE PREPARATION/ LANDSCAPING		FOUNDATIONS AND BUILDINGS		HARDSTANDING (ROADS AND PATHS)	
	CLOSEST	AVERAGE	CLOSEST	AVERAGE	CLOSEST	AVERAGE
Sativus Close	70	330	80	280	80	280
Fairfax Drive	65	330	80	270	80	270
1 Radwinter Road	210	445	260	480	260	480
The Vineyard	230	575	340	525	340	525
Note: All distances in metres						

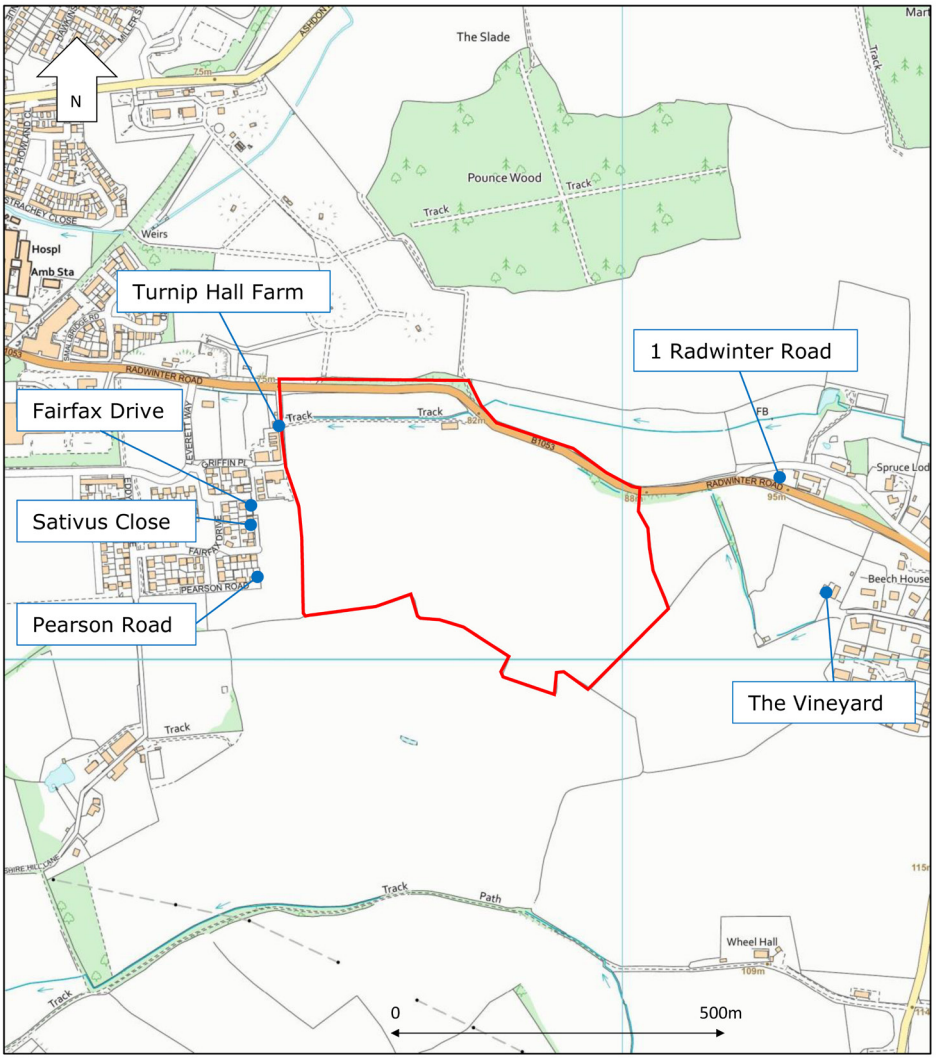

Figure 11.2: Construction Assessment Locations

11.46 The assessment criteria for each of the receptors have been determined in accordance with Table A10.2.1 in **Appendix 11.2**, whereby the existing ambient noise levels, rounded to the nearest 5dB, define the assessment criteria.

11.47 In this instance, the lowest existing ambient sound levels measured at the Site, rounded to the nearest 5dB, were below 65dB and, therefore, the Category A criterion of 65dB would apply for all receptors.

11.48 **Table 11.7** sets out the predicted unmitigated construction noise levels for each assessment location. Where the construction noise levels are predicted to exceed the adopted 65dB criterion, the values are bolded.

Table 11.7: Predicted Construction Noise levels, Free-Field dB

RECEPTOR	PHASE OF CONSTRUCTION WORKS(1)				
	1	2	3	4	5
Turnip Hall Farm	60.9 - **90.4**	60.8 - **80.2**	63.1 - **82.5**	55.3 - **74.7**	60.5 – **90.0**
Pearson Road	59.8 - **73.5**	60.5 - **71.6**	62.8 - **73.9**	55.0 - **66.1**	59.4 - **73.1**
Sativus Close	60.1 - **73.5**	60.8 - **71.6**	63.1 - **73.9**	55.3 - **66.1**	59.6 - **73.1**
Fairfax Drive	60.1 - **74.2**	61.1 - **71.6**	63.4 - **73.9**	55.6 - **66.1**	59.6 - **73.7**
1 Radwinter Road	57.5 – 64.0	56.1 - 61.4	58.4 - 63.7	50.6 - 55.9	57.0 - 63.6
The Vineyard	55.2 - 63.2	55.3 - 59.1	57.6 - 61.4	49.8 - 53.6	54.8 - 62.8
Note: Phases of work as follows: Phase 1 = Site preparation works; Phase 2 = Foundation works; Phase 3 = Building erection works; Phase 4 = Hardstanding/road construction works; and Phase 5 = Landscaping works					

11.49 It can be seen from **Table 11.7** that, when the works are at an average distance from the receptors, which is likely to be the case for the majority of the time, the 65dB criterion is predicted to be met at all receptors for all phases of works; this would be a negligible magnitude of impact.

11.50 The 65dB criterion is predicted to be exceeded by more than 10dB at Turnip Hall Farm when all phases of works except Hardstanding/road construction works, are undertaken close to the Site boundary. This would result in a high magnitude of impact.

11.51 The 65dB criterion is predicted to be exceeded by less than 10dB at Turnip Hall Farm for Hardstanding/road construction works, and at Pearson Road, Sativus Close and Fairfax Drive for all phases of works, when the works are undertaken close to the Site boundary. If the works were undertaken on the Site boundary for more than one month, this would result in a moderate magnitude of impact. If they were undertaken on the Site boundary for less than one month, this would result in a low magnitude of impact.

11.52 The 65dB criterion is predicted to be met at 1 Radwinter Road and The Vineyard, even when works are undertaken close to the Site boundary. This would result in a negligible magnitude of impact.

11.53 The above outcomes are predicted to occur when construction works are undertaken at their closest to the receptors, which in practice will only occur for a short period of time. It is also noted that the calculations assume that all plant items for a particular phase of construction

works are located at the closest point to a receptor, even though this is not likely to be physically possible in practice.

Assessment of Construction Vibration

11.54 Some elements of construction work may generate perceptible levels of vibration at off-site receptors, for example, heavy ground works or vibratory compaction, when they occur close to boundaries of the Site.

11.55 Part 2 of BS5228: 2009+A1: 2014 contains a number of formulae that may be used to estimate vibration levels for specific types of activity, such as the use of a vibratory roller or a rotary piling rig. The standard also contains historic vibration data measured at various sites around the UK for a range of piling operations, although piling is not anticipated at the Site.

11.56 Transport Research Laboratory (TRL) Report 53 contains historic data for a number of ground engineering works, such as heavy lorries on poor road surfaces, or bulldozers.

11.57 The level of vibration from heavy ground works such as bulldozing has been estimated from Figure A10.2.1 in **Appendix 11.2**, which suggests that vibration levels of more than 1mm/s are unlikely where ground works are undertaken more than approximately 8 to 10 metres from a receptor.

11.58 The likely vibration levels from vibratory compaction activities have been calculated using the formulae in Part 2 of BS5228: 2009+A1: 2014. The calculation suggests that vibratory compaction works undertaken at least approximately 50 metres from a sensitive receptor are unlikely to generate vibration levels of 1mm/s or more. However, vibratory compaction works undertaken closer than approximately 10 metres may generate vibration levels of 10mm/s or more.

11.59 The closest receptor, Turnip Hall Farm, is approximately 10 metres from the boundary of the Site.

11.60 Based on this distance, vibration levels of more than 1mm/s are unlikely due to heavy ground works such as bulldozing. This would result in no worse than a low magnitude of impact.

11.61 However, if vibratory compaction is undertaken at or close to the Site boundary, vibration levels are likely to exceed 1mm/s at Turnip Hall Farm, although vibration levels are unlikely to exceed 10mm/s. This would result in a moderate magnitude of impact.

11.62 The remaining receptors are all more than 50 metres from the Site boundary and, therefore, vibration levels are unlikely to be higher than 1mm/s, even if vibratory compaction is undertaken at the Site boundary.

11.63 As with the construction noise assessment, the above outcomes are all predicted to occur when construction works are undertaken at their closest distance to the receptors, which in practice will only occur for a short duration.

11.64 Based on the average distance between works and receptors, which represents the bulk of the construction period, vibration levels are unlikely to exceed 0.3mm/s. This would result in a negligible magnitude of impact.

Assessment of Construction Traffic

11.65 Data on likely levels of construction traffic have been confirmed by the traffic consultant for the project. The exact routing of construction traffic is not yet known and will be determined at a later stage. Therefore, as a worst-case, it has been assumed that all construction vehicles could use any road surrounding the Site, even though this cannot occur in practice.

11.66 The traffic flows including the peak construction traffic are shown in Table A10.4.6 in **Appendix 11.4**. The existing 2019 baseline flows along each road have also been provided.

11.67 Traffic noise predictions have been carried out at a notional receptor location 10 metres from the edge of each carriageway and 1.5 metres above ground level. A notional receptor has been used because it is the change in traffic noise level that is of interest, not the absolute noise levels at any given receptor. The predicted changes in noise level will occur at noise-sensitive receptors along the road considered.

11.68 The likely changes in road traffic noise levels, as a result of the construction traffic, are shown in Table A10.4.7 in **Appendix 11.4**.

11.69 It can be seen from Table A10.4.7 in **Appendix 11.4** that changes in road traffic noise levels are predicted to be less than 1dB. This would result in a negligible magnitude of impact.

Operation

Off-site Road Traffic Noise

11.70 Road traffic data for roads around the Site has been supplied by the traffic consultant for the project. The data has been supplied with and without traffic generated by the Proposed Development so that its effect on existing road traffic noise levels can be determined.

11.71 Traffic noise predictions have been carried out at notional receptor locations 10 metres from the edge of each carriageway and 1.5 metres above ground level. Notional receptors have been used because it is the changes in traffic noise levels that are of interest, not the absolute noise levels at any given receptor. The predicted change in noise level will occur at noise-sensitive receptors along each road considered.

11.72 The supplied daytime traffic flows are set out in **Appendix 11.5**, in Table A10.5.1 for the baseline year of 2019 and for the year of opening (2026) with and without the Proposed Development, and in Table A10.5.2 for the baseline year of 2019 and the year 2041, which is the year anticipated to have the highest traffic flows within 15 years of the opening year, with and without the Proposed Development.

11.73 The assessment of off-site road traffic noise has been repeated for the night-time period. The supplied night-time traffic flows are set out in Table A10.5.3 for the year of opening (2026) and in Table A10.5.4 for the year 2041, in **Appendix 11.5**.

11.74 It should be noted that the noise assessment has adopted a worst case opening year of 2026 to provide a robust assessment.

11.75 For the night-time period, the changes in road traffic noise have been calculated on the same basis as the daytime calculations, but using the one hour calculation method instead of the 18 hour calculation method. The eight hour night-time traffic flows are assumed to be spread evenly across eight, one hour periods, and the calculated one hour values are aggregated to determine the eight hour value.

11.76 The vehicle speeds have been modelled in accordance with the guidance in CRTN, according to the class of road. As required in CRTN, low flow corrections have been applied to all routes with a daytime flow of less than 4,000 vehicles, or night-time flow of less than 200 vehicles per hour.

11.77 The predicted changes in daytime road traffic noise levels as a result of the use of the Proposed Development are shown in Table A10.5.5 for the year of opening (2026) and Table A10.5.6 for the year 2041, in **Appendix 11.5**.

11.78 It can be seen from Table 10.5.5 in **Appendix 11.5** that for the year of opening (2026), the changes on all of the links are predicted to be less than 1dB; this would result in a negligible magnitude of impact in the short-term.

11.79 It can be seen from Table 10.5.6 of **Appendix 11.5** that for the year anticipated to have the highest traffic flows within 15 years of the opening year (2041), the changes on all of the links are predicted to be less than 3dB; this would result in a negligible magnitude of impact in the long-term.

11.80 The predicted changes in night-time road traffic noise levels as a result of the use of the Proposed Development are shown in Table A10.5.7 for the year of opening (2026) and Table A10.5.8 for the year 2041, in **Appendix 11.5**.

11.81 It can be seen from Table 10.5.7 in **Appendix 11.5** that for the year of opening (2026), the changes are predicted to be less than 1dB; this would result in a negligible magnitude of impact in the short-term. There is a decrease of 1.9dB predicted on one link, Newport; this would result in a low magnitude benefit in the short-term.

11.82 It can be seen from Table 10.5.8 of **Appendix 11.5** that for the year anticipated to have the highest traffic flows within 15 years of the opening year (2041), the changes are predicted to be less than 3dB; this would result in a negligible magnitude of impact in the long-term.

Evaluation of Predicted Impacts

Construction

Assessment of Construction Noise

11.83 The assessment of construction noise showed that a high magnitude of impact was predicted for one receptor, Turnip Hall Farm, when works are undertaken close to the Site boundary with that receptor. When combined with the high sensitivity of receptor, this would result in a **major adverse** effect, which is considered to be significant in an EIA context.

11.84 For Pearson Road, Sativus Close and Fairfax Drive, a moderate magnitude of impact was predicted if works were undertaken on the closest Site boundary for more than one month, and a low magnitude of impact was predicted if works were undertaken on the closest Site boundary for less than one month. In practice, it is considered unlikely that works would be undertaken on the closest Site boundary to a receptor for more than one month and, therefore, there would be a low magnitude of impact. When combined with the high sensitivity of receptor, this would result in a **minor adverse** effect, which is not significant in an EIA context.

11.85 For 1 Radwinter Road and The Vineyard, a negligible magnitude of impact was predicted. When combined with the high sensitivity of receptor, this would result in a **negligible** effect, which is not significant in an EIA context.

11.86 The above outcomes are all predicted to occur when construction works are undertaken at their closest distance to the receptors, which in practice will only occur for a short duration.

11.87 Based on the average distance between works and receptors, which represents the bulk of the construction period, noise levels are likely to result in a negligible magnitude of impact. When combined with the high sensitivity of receptor, this would result in a **negligible** effect, which is not significant in an EIA context.

11.88 All construction noise effects would be temporary.

Assessment of Construction Vibration

11.89 The assessment of construction vibration showed that no worse than a low magnitude of impact is predicted for the majority of works, even if they are undertaken close to the Site boundaries. When combined with the high sensitivity of receptor, this would result in a **minor adverse** effect, which is not significant in an EIA context.

11.90 However, if vibratory compaction is undertaken at or close to the Site boundary with one receptor, Turnip Hall Farm, a moderate magnitude of impact is possible. When combined with the high sensitivity of receptor, this would result in a **moderate adverse** effect, which is significant in an EIA context.

11.91 The above outcomes are all predicted to occur when construction works are undertaken at their closest distance to the receptors, which in practice will only occur for a short duration.

11.92 Based on the average distance between works and receptors, which represents the bulk of the construction period, vibration levels are likely to result in a negligible magnitude of impact. When combined with the high sensitivity of receptor, this would result in a **negligible** effect, which is not significant in an EIA context.

11.93 All construction vibration effects would be temporary.

Assessment of Construction Traffic

11.94 The assessment of construction traffic noise showed that any increases in noise, as a result of the construction of the Proposed Development, would result in a negligible magnitude of impact.

11.95 When combined with the high sensitivity of receptors around the Site, this would result in a **negligible** effect, which is not significant in an EIA context.

Operation

Off-site Road Traffic Noise

11.96 The assessment of off-site road traffic noise showed that any increases in noise, as a result of the Proposed Development, would result in negligible magnitudes of impact in both the short-term and long-term. A decrease in noise that would be a low magnitude benefit was predicted on one road link in the short-term.

11.97 When combined with the high sensitivity of receptors around the Site, the negligible magnitudes of impact would result in a negligible effect. The low magnitude of impact would result in a **minor adverse** effect. These effects are not significant in an EIA context.

Mitigation

Construction Phase

11.98 The assessment of potential noise and vibration from the construction phase of the Proposed Development identified the potential for significant adverse effects when construction works are undertaken at their closest to receptors. However, these are only likely to occur for a short duration. For the majority of the time, when works are undertaken at an average distance from receptors, no significant effects are likely.

11.99 Notwithstanding this, measures to control construction activities to further minimise the potential construction noise and vibration effects could include:

- Phasing the development of the Application Site to minimise the period where noisy works are undertaken close to the Application Site boundaries;
- Adhering to agreed working hours;
- Controlling off-site parking of construction traffic on the public highway;
- Implementing a traffic management system at site entrances at all times to control the traffic into the Application Site and the discharge of trucks from the Application Site to avoid congestion;
- Minimising disturbance from reversing alarms through measures such as site layout, provision of screening, or use of broadband sound emitting reversing alarms;
- Using 'silenced' plant and equipment wherever possible;
- Switching off vehicle engines where vehicles are standing for a significant period of time;
- Operating plant at low speeds where possible and incorporating automatic low speed idling;
- Selecting electrically driven equipment where possible in preference to internal combustion powered, hydraulic power in preference to pneumatic, and wheeled in lieu of tracked plant;
- Maintaining all plant properly (greased, blown silencers replaced, saws kept sharpened, teeth set and blades flat, worn bearings replaced, etc);
- Giving consideration to temporary screening or enclosures for static noisy plant to reduce noise emissions, and certifying plant to meet any relevant EC Directive standards; and
- Making all contractors familiar with the guidance in BS5228 (Parts 1 and 2) which should form a pre-requisite of their appointment.

11.100 Implementing the above measures will reduce noise and vibration from the construction works. The exact magnitude of the reductions will depend on the detail of the proposed construction techniques, however, reductions in construction noise of between 5 and 10dB can be expected.

11.101 The exact reduction in terms of construction vibration is harder to quantify, as it is site-specific, and can only be determined when a contractor is appointed.

11.102 The above measures could be implemented as part of a CEMP, which could be secured through planning condition.

Operational Phase

11.103 The assessment of off-site road traffic noise suggests that there would be no significant adverse effects. No mitigation measures are considered necessary.

Residual Effects

Construction Phase

11.104 With an assumed 5dB reduction in construction noise levels provided by appropriate mitigation, which is considered feasible, and outlined above, the construction noise levels would be reduced to below the 65dB criterion at Pearson Road, Sativus Close and Fairfax Drive for 'Hardstanding/road construction works' when they are undertaken at their closest to the receptors. The magnitude of impact would, therefore, reduce from low/moderate to negligible, which, with the high sensitivity of receptors, would result in a **negligible** effect, which would not be significant in an EIA context.

11.105 Even with mitigation, construction noise levels are still likely to exceed the 65dB criterion by more than 10dB at Turnip Hall Farm for all phases except the 'Hardstanding/road construction works', when works are undertaken at their closest. This would result in a **major adverse** effect, which would be significant in an EIA context.

11.106 Construction noise levels are predicted to exceed the 65dB criterion by less than 10dB at Turnip Hall Farm for 'Hardstanding/road construction works', and at Pearson Road, Sativus Close and Fairfax Drive for all phases except 'Hardstanding/road construction works', when works are undertaken at their closest. On the assumption that it is unlikely that the works would be undertaken on the closest Site boundary for more than one month, this would result in a **minor adverse** effect, which is not significant in an EIA context.

11.107 These outcomes occur when construction works are undertaken at their closest to receptors, which, in practice, will only occur for a short duration.

11.108 The 65dB criterion is not predicted to be exceeded for the majority of the works, where they are away from the Site boundaries, which would result in a negligible magnitude of impact. Even when considering the high sensitivity of receptors, this would result in a **negligible** effect, which is not significant in an EIA context.

11.109 The distances from receptors at which construction noise levels would meet the 65dB criterion, resulting in a negligible effect, are 110 metres for 'Site preparation works', 100 metres for 'Foundations and Landscaping works', 130 metres for 'Building erection works', and 55 metres for 'Hardstanding/road construction works'.

11.110 Even taking into account measures to reduce vibration from construction works, vibration levels may exceed 1mm/s at Turnip Hall Farm, if vibratory compaction is undertaken at or close to the Site boundary with this receptor, although vibration levels are unlikely to exceed 10mm/s.

11.111 This would result in a moderate magnitude of impact, which would result in a **moderate adverse** effect when combined with the high sensitivity of receptor, which is significant in an EIA context.

11.112 However, as with the construction noise assessment, this outcome is only predicted to occur when construction works are undertaken at their closest distance to the receptor, which in practice will only occur for a short duration.

11.113 Where the works are away from the Site boundaries, vibration levels are unlikely to exceed 0.3mm/s, which would result in a negligible magnitude of impact. Even when considering the high sensitivity of receptors, this would result in a **negligible** effect, which is not significant in an EIA context.

11.114 The assessment of construction traffic noise suggests that there would be no significant adverse effects, even without taking into account any mitigation.

Operational Phase

11.115 The assessment of off-site road traffic noise suggests that there would be no significant adverse effects, even without taking into account any mitigation.

Cumulative Effects

Intra-Project Effects

11.116 This section assesses the likely significant environmental effects of potential noise and vibration emissions from the Proposed Development on nearby noise-sensitive receptors from both its construction and operational use.

11.117 When construction works are undertaken at an average distance from off-site receptors, which should be the case for the majority of the time, no significant adverse effects are predicted. The distances from receptors at which construction noise levels would result in no residual significant adverse effects are 110 metres for 'Site preparation works', 100 metres for 'Foundations and Landscaping works', 130 metres for 'Building erection works', and 55 metres for 'Hardstanding/road construction works'.

11.118 No significant adverse effects are predicted on off-site road traffic noise levels as a result of the operation of the Proposed Development.

11.119 There is the potential for an interaction or combination of noise, dust and air quality on the same receptors during construction and operational phases.

11.120 Chapter 7 assesses the likely significant air quality effects of the Proposed Development on relevant receptors, including nearby residential receptors during construction and operation.

11.121 The assessment concludes that impacts can be sufficiently controlled provided appropriate mitigation measures are implemented during construction, residual effects will be negligible and not significant in an EIA context. Therefore, any combined effects of noise and dust on nearby receptors during the construction phase is not predicted to be any greater than already identified through this chapter.

11.122 The assessment also concludes that with the incorporation of mitigation measures within the design of the Proposed Development, residual effects will be negligible and not significant in an EIA context. Therefore, any combined effects of noise and air quality during the operational phase is not predicted to be any greater than already identified through this chapter.

Inter-Project Effects

11.123 Other schemes, both permitted and potential, have been considered to determine whether there is likely to be any cumulative effect with the Proposed Development.

11.124 The specific schemes have been identified in Chapter 14 of this ES. The schemes identified are residential, or predominantly residential developments. Therefore, the key cumulative effects are likely to be related to off-site road traffic noise levels, and it is understood that traffic from the schemes has already been included in the supplied traffic data.

Monitoring

11.125 The exact details of any construction noise or vibration monitoring measures would be set out in a CEMP, which would be secured by planning condition.

Summary of Impacts

11.126 This chapter sets out the potential impacts, mitigation and residual impacts associated with noise from the Proposed Development. These impacts have been assessed in terms of their effect, and the significance of these effects assessed in EIA terms.

11.127 The noise climate at the Site is influenced by road traffic noise, primarily from Radwinter Road, which borders the Site to the north and the existing noise levels at the Site have been established by direct measurement.

11.128 The construction phase of the Proposed Development has been considered to determine whether construction noise and vibration is likely to lead to significant effects at the noise and vibration sensitive receptors close to the Site. The following conclusions have been reached:

- Construction noise may lead to significant adverse effects at Turnip Hall Farm without mitigation measures when works are undertaken on the boundaries of the Site closest to the receptors. However, these significant effects would only occur for a short duration and for the majority of the time, no significant effects would occur;
- Construction vibration may to lead to significant adverse effects at sensitive receptors without mitigation measures when works are undertaken on the boundaries of the Site closest to the receptors. However, these significant effects would only occur for a short duration and for the majority of the time, no significant effects would occur; and
- The effect of construction traffic on off-site road traffic noise levels will not be significant.

11.129 The operational phase of the Proposed Development has been considered to determine whether operational road traffic noise is likely to lead to significant effects at the noise-sensitive receptors close to the Site. No significant effects are likely.

11.130 A range of best practice mitigation measures has been suggested to reduce noise and vibration levels from construction, tried and tested measures whereby their effectiveness can be relied upon and controlled through suitably worded planning conditions. However, even with these measures in place, significant adverse effects could still occur at noise-sensitive receptors when works are undertaken on the boundaries of the Site closest to the receptors. However, these significant effects would only occur for a short duration and for the majority of the time, no significant effects would occur, even without taking into account mitigation. Given the nature of the effect, there would be no long term residual effects.

11.131 The likely impacts and effects are summarised in **Table 11.8**.

Table 11.8: Summary of Impacts: *Noise and Vibration*

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Construction Noise – when works undertaken at their closest to following receptors:												
Turnip Hall Farm	Loc	High	High	Adv	Rev	ST	Maj	Appropriate measures implemented during construction phase; these could be incorporated into a CEMP	Adv	Rev	ST	Maj
Pearson Road, Sativus Close, Fairfax Drive	Loc	High	Low	Adv	Rev	ST	Min		Adv	Rev	ST	Min
1 Radwinter Road, The Vineyard	Loc	High	Neg	Adv	Rev	ST	Neg		Adv	Rev	ST	Neg
Construction Noise – when works undertaken at average distance from receptors	Loc	High	Neg	Adv	Rev	ST	Neg		Adv	Rev	ST	Neg
Construction Vibration – when works undertaken at their closest to following receptors:												
Turnip Hall Farm	Loc	High	Mod	Adv	Rev	ST	Mod	Appropriate measures implemented during construction phase; these could be incorporated into a CEMP	Adv	Rev	ST	Mod
Pearson Road, Sativus Close, Fairfax Drive, 1 Radwinter Road, The Vineyard	Loc	High	Low	Adv	Rev	ST	Min		Adv	Rev	ST	Min
Construction Vibration – when works undertaken at average distance from receptors	Loc	High	Neg	Adv	Rev	ST	Neg		Adv	Rev	ST	Neg

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Construction Traffic	Loc	High	Neg	Adv	Rev	ST	Neg	Appropriate measures implemented during construction phase; these could be incorporated into a CEMP	Adv	Rev	ST	Neg
Operational Traffic – all links except Newport (Link ID K1) in short-term, all links in long-term	Loc	High	Neg	Adv	Irrev	ST/LT	Neg	-	Adv	Irrev	LT	Neg
Newport (Link ID K1) in short-term	Loc	High	Low	Ben	Irrev	ST	Min		Ben	Irrev	ST	Min

Key:

Loc: Local	Adv: Adverse	Min: Minor	Rev: Reversible	LT: Long Term	Mod: Moderate
Neg: Negligible	Maj: Major	Ben: Beneficial	Irrev: Irreversible	ST: Short Term	

Socio-Economics and Health

12

12.0 Socio-Economics and Health

Introduction

12.1 This chapter addresses the socio-economic and health impacts of the Proposed Development. It has been prepared by RSK to assess the impacts of the Proposed Development in relation to the effects it would have on the socio-economic and health environment.

12.2 The chapter is supported by the London Health Urban Development Unit (HUDU) Rapid Health Impact Assessment (HIA) checklist, provided in **Appendix 12.1**.

Potential Impacts

Socio-Economics

12.3 The construction of the Proposed Development would provide for employment opportunities for local construction contractors and labourers. Although not all workers are likely to be sourced from within a commutable distance, it is likely that only a small portion would be resident in the local community during the construction phase. Due to the short-term nature of the construction phase, this is unlikely to result in significant demand on local services during construction.

12.4 The Proposed Development would provide for up to 233 residential units once completed. This would have beneficial effects on the housing provision within the local area. An increase in population may also result in increase in the working age population. However, a potential increase in the population would also result in additional demand and pressure on public services, in particular on education and healthcare.

Health and Quality of Life

12.5 The construction of the Proposed Development may result in a temporary increased noise, dust, plant and vehicle emissions. Air pollution is a major environmental risk to health and an increased level of dust particles during construction can result in nuisance, resulting in reduced quality of life. Construction noise can also result in nuisance, also effecting wellbeing and the quality of life. Increased traffic due to construction vehicles can have an effect on pedestrian amenity and cause fear and intimidation, as well as lead to a reduction of safety and increased car accidents. These impacts would, however, be short-term and temporary due to the short-term nature of the construction phase.

12.6 Once the Site is operational and occupied the main impacts are likely to be from increased traffic. Increased traffic can effect pedestrian amenity and safety as well as lead to increased air pollution and noise, with consequent effects on health and quality of life. There would, however, be some positive health impacts resulting from the creation of more formalised open space throughout the development and links to sustainable movement e.g. maintained and adequately lit footpaths encouraging movement and activity.

Methodology

12.7 Unlike other topics assessed with an EIA, there is no legislation that specifies the content for a socio-economic assessment or health impact assessment, or appropriate standards and thresholds for use in significance criteria. These assessments have, therefore, been informed by professional experience and knowledge. The principles of the assessment have been based on ‘International Principles for Social Impact Assessment’ (International Association for Impact

Assessment (IAIA), 2003), the Additionality Guide (Homes & Communities Agency (HCA), 4th Edition, 2014). With regards to health assessment; best practice health impact guidance from the HUDU has been considered along with regard to the UDC Health and Wellbeing Impact Checklist which covers similar themes and topics relating to health. Consultation with Dave Toombs, Senior Health Improvement Officer at UDC took place on Friday 12th March 2021 to confirm the proposed approach to the health assessment. This was verbally agreed with a written follow up sent to Dave Toombs by email from RSK. Cross reference is also made to other technical assessments reported within this ES where potential impacts on human health have been considered.

12.8 A desk-based assessment has been completed for the scope defined above, using information in the public domain, together with further information and issues raised through consultation.

Study Area

12.9 The Site is located within Ashdon Ward but is in close proximity to Saffron Walden Castle Ward and Saffron Walden Shire Ward. For the purposes of the assessment, a Local Impact Area (LIA) has been set at a 5km radius around the Site to allow consideration of impacts on nearby communities. The Wider Impact Area (WIA) has been defined as Uttlesford District, Essex County and the East of England, as appropriate (these categories have been made with respect to the availability of information for these areas).

Assessment Years (Temporal Scope)

12.10 Baseline data for the Socio-Economic Assessment was collated in 2021 and, as such, the baseline year for the assessment is taken as 2021. However, it should be noted that due to publication programmes, much of the baseline data relates to earlier years.

12.11 Baseline data for health impacts was also collated in 2021, therefore, the baseline year for the assessment is taken as 2021. At the time of writing, the Coronavirus Pandemic continues to be a large factor in Public Health within England. Whilst this situation is severe, it is not expected that the impacts from Coronavirus will alter the baseline information presented within this chapter. Therefore, no further consideration has been given to Coronavirus in this chapter.

12.12 Subject to planning, construction is currently proposed to start in 2023, with the first properties available later in 2024. The Proposed Development is anticipated to be completed approximately seven years following commencement. Should either of these dates change significantly the assessment would require review and validation or update.

Existing Baseline Conditions

12.13 Existing baseline information has been collected from a desk-based review of publicly available information, including:

- Office for National Statistics (ONS) – regional profiles, population estimates and census data;
- Public Health England (PHE) – health indicators;
- National Health Service (NHS) – NHS services and statistics;
- UDC Local Plan documents – Needs Assessment;
- Department for Education - school capacity figures; and,
- ECC – school capacity forecasts, area profiles.

Predicted Impacts

12.14 An assessment has been made of the significance of likely socio-economic effects for construction and operation of the Proposed Development, considering the importance and sensitivity of receptors, the size (magnitude) of impact, how long the impact occurs and how likely it is to occur, based on the information available at the time of assessment. Significance criteria are outlined below, together with further detail on the calculations undertaken as part of the assessment.

12.15 Employment created during the construction phase of the Proposed Development has been calculated by dividing the estimated value of the project by the Gross Value Add (GVA) per construction industry employee. This figure is referred to as 'job years'. Following economic conventions adopted by HM Treasury, ten job years of employment can be taken as equivalent to one full time job (known as full time equivalent or FTE). This employment would be temporary as its duration is dependent on the length of the construction period.

12.16 Indirect (local suppliers) and induced (local services) employment opportunities would also be generated by the Proposed Development. Indirect levels of operational employment have been assessed using the relevant employment multipliers. Whilst it is accepted that the impacts of the development will be felt at least at a regional level no account has been taken for leakage as no beneficiary group is identified. Both displacement and substitution effects are considered qualitatively.

12.17 The London HUDU Rapid HIA tool has been completed in order to assess the potential health impacts as a result of the Proposed Development. The completed checklist can be found in **Appendix 12.1** and covers a similar scope to that outlined in the Promoting Healthier and Active Communities – Pre-Application Checklist found on the Uttlesford.Gov.uk website.

12.18 The Rapid HIA tool is designed to assess the likely health impacts of development plans and proposals and helps identify those determinants of health which are likely to be influenced by a specific development proposal. The tool provides an assessment matrix based on eleven topics or broad determinants as follows:

- Housing design and affordability;
- Access to health and social care services and other social infrastructure;
- Access to open space and nature;
- Air quality, noise and neighbourhood amenity;
- Accessibility and active travel;
- Crime reduction and community safety;
- Access to healthy food;
- Access to work and training;
- Social cohesion and inclusive design;
- Minimising the use of resources; and
- Climate change.

12.19 Potential impacts on human health have also been addressed within specific topic chapters throughout this ES i.e. Transport (Chapter 13), Air Quality (Chapter 7) and Noise and Vibration (Chapter 11). This chapter will cross refer to health impacts identified within these chapters.

Significance Criteria

12.20 There is no formalised technical guidance or criteria available in regard to the assessment of socio-economic effects. As such, the assessment will be qualitative in nature and the criteria used to determine the significance of effects will be formulated with professional judgement and experience of similar developments.

12.21 The criteria in **Table 12.1** is proposed to assess the sensitivity and importance of the receptor, while the criteria in **Table 12.2** will be used to define the magnitude of impact. The significance of effect will be assessed based on the receptor sensitivity and the impact magnitude.

Table 12.1: Receptor Sensitivity / Importance

RECEPTOR SENSITIVITY / IMPORTANCE	VALUE	DESCRIPTION
International / National	Very high	Receptor of international importance and scale with very limited potential for substitution e.g. the international economy.
National	High	Receptor of national importance and scale with limited potential for substitution or reparation e.g. the national economy, national cycle routes, nationally recognised tourist attractions or designated sites, cities.
Regional / District	Moderate	Receptor of regional importance and scale with limited potential for substitution or reparation e.g. regional and Council level economy, regional attractions and associated visitors, towns and significant settlements.
District / Local	Low	Receptor of local importance and scale which is difficult to substitute, rare of unusual at a local level e.g. local economy within the LIA, local tourist attractions and businesses, active workers in the LIA.
Local	Very low	Receptor of local importance and scale which is either not vulnerable to change or can be readily substituted.

Table 12.2: Impact Magnitude

MAGNITUDE	DEFINITION
Major	Irreversible, substantial (>20%) and permanent impact
Moderate	Considerable (>10%) and permanent impact
Minor	Temporary and/or reversible impact, or modest (<10%) permanent impact
Neutral	No discernible impact

12.22 An assessment of effect significance has been made as a function of the receptor sensitivity and impact magnitude, as summarised in **Table 12.3.** Significant effects are considered to be those assessed as having a greater than moderate significance of effect.

Table 12.3: Significance of Effects Matrix

		RECEPTOR VALUE / SENSITIVITY				
		VERY HIGH	HIGH	MODERATE	LOW	VERY LOW
MAGNITUDE OF CHANGE	MAJOR BENEFICIAL	Major Beneficial	Major-Moderate Beneficial	Moderate Beneficial	Moderate/ Minor Beneficial	Minor Beneficial
	MODERATE BENEFICIAL	Major -Moderate Beneficial	Moderate Beneficial	Moderate/ Minor Beneficial	Minor Beneficial	Minor/ Negligible Beneficial
	MINOR BENEFICIAL	Moderate Beneficial	Moderate/ Minor Beneficial	Minor Beneficial	Minor/ Negligible Beneficial	Negligible
	NEUTRAL	Negligible	Negligible	Negligible	Negligible	Negligible
	MINOR ADVERSE	Moderate Adverse	Moderate/ Minor Adverse	Minor Adverse	Minor/ Negligible Adverse	Negligible
	MODERATE ADVERSE	Major-Moderate Adverse	Moderate Adverse	Moderate/ Minor Adverse	Minor Adverse	Minor/ Negligible Adverse
	MAJOR ADVERSE	Major Adverse	Major-Moderate Adverse	Moderate Adverse	Moderate/ Minor Adverse	Minor Adverse

Existing Baseline Conditions

Population and Demographics

12.23 The Site is located to the east of Saffron Walden, within the Uttlesford district of Essex. The Site is located within Ashdon Ward, but is in close proximity to Saffron Walden Castle Ward and Saffron Walden Shire Ward. Saffron Walden is one of four market towns within Uttlesford and is one of the most densely populated areas of Uttlesford. Based on the 2011 census data, Saffron Walden had a resident population of 15,210 people in 2011. Based on population estimates from ONS, the population in Saffron Walden has risen to 17,012 in 2019.

12.24 **Table 12.4** provides the population statistics for the LIA and the wider area. The population within the LIA is estimated to be approximately 21,847 in 2019, growing at approximately 1.3% per year. There are, however, significant variations within the LIA, with Saffron Walden Castle Ward growing at approximately 2.8% per year while Ashdon Ward and Saffron Walden Audley Ward are growing less than 1% per year. The growth of population in the LIA is slightly less than the overall growth of the Uttlesford District, but higher than the regional growth.

Table 12.4: Population Statistics

DATE	POPULATION				ANNUAL GROWTH RATE SINCE 2011 (%)
	1991	2001	2011	2019	
East of England	5,055,515	5,388,140	5,846,965	6,236,072	0.8
Essex	1,242,241	1,310,835	1,393,587	1,489,189	0.9

DATE	POPULATION				ANNUAL GROWTH RATE SINCE 2011 (%)
	1991	2001	2011	2019	
Uttlesford District	65,432	68,946	79,443	91,284	1.9
LIA (Wards)*					
Ashdon Ward	1,063	1,601	2,040	2,172	0.8
Saffron Walden Audley Ward	2,646	4,575	4,360	4,550	0.5
Saffron Walden Castle Ward	3,766	4,925	3,934	4,808	2.8
Saffron Walden Shire Ward	3,159	5,106	6,983	7,654	1.2
Debden & Wimbish Ward	2,206	2,303	2,407	2,663	1.3
LIA total	**12,840**	**18,510**	**19,724**	**21,847**	**1.3**
Source: ONS 1991 Census, 2001 Census, 2011 Census and Population Estimates.					

** Note that ward boundaries have changed since 1991.*

12.25 Ashdon Ward, within which the Site is located, has a relatively sparse population (0.5 persons per hectare) reflecting the rural nature of most of the ward. The Site is located in close proximity to the more densely populated Saffron Walden Shire Ward (15.8 persons per hectare) (ONS, 2011).

12.26 **Table 12.5** provides the age structure of the population within the LIA and the wider area. While overall the population age structure of LIA is comparable to Uttlesford District as well as the regional age structure, there is quite a bit of variation within the wards. Saffron Walden Audley Ward in particular has a comparatively high population of over 65s and a comparatively lower working age population. Debden and Wimbish Ward on the other hand has a comparatively low population of over 65s and a higher working age population.

12.27 The population of over 65s in Uttlesford is expected to increase, with a forecasted decrease in the working age population (Organisational Intelligence and ECC, 2016).

Table 12.5: Age Structure

AGE GROUP	POPULATION (%)							
	ASHDON	SAFFRON WALDEN AUDLEY	SAFFRON WALDEN CASTLE	SAFFRON WALDEN SHIRE	DEBDEN & WIMBISH	UTTLESFORD	ESSEX	EAST OF ENGLAND
0 – 15	383 (18%)	750 (16%)	924 (19%)	1,576 (21%)	519 (19%)	18,134 (20%)	282,266 (19%)	1,212,041 (19%)
6 – 24	194 (9%)	385 (8%)	376 (8%)	607 (8%)	359 (13%)	7,964 (9%)	141,383 (9%)	598,726 (10%)
25 - 49	549 (25%)	1,260 (28%)	1,610 (33%)	2,457 (32%)	988 (37%)	27,723 (30%)	461,583 (31%)	1,973,888 (32%)
50 - 64	569 (26%)	963 (21%)	926 (19%)	1,536 (20%)	426 (16%)	19,533 (21%)	296,390 (20%)	1,212,911 (19%)
65+	477 (22%)	1,192 (26%)	972 (20%)	1,478 (19%)	371 (14%)	17,930 (20%)	307,567 (21%)	1,238,506 (20%)
Source: ONS Population estimates (2019)								

Housing Supply and Tenure

12.28 The West Essex and East Hertfordshire Strategic Housing Market Assessment (Open Research Services, 2017) identified a need for 13,332 dwellings in Uttlesford over the period 2011 to 2033, equating to approximately 606 dwellings per year. Housing need includes both market housing and affordable housing. More recently the Uttlesford District Council Housing Delivery Test and 5-Year Land Supply Statement (Uttlesford District Council, 2021) identifies a housing requirement of 706 dwellings per year based on the use of the standard methodology for calculating housing supply as set out in Planning Practice Guidance on housing and economic development needs assessments. The Statement calculates that the district has 3.11 years of housing supply for the 2020 – 2025 5-year period, with of deficit of 1,402.

12.29 **Table 12.6** shows that on average the percentage of households in the LIA who own their home outright or via a mortgage is slightly lower than the district or county average, although it is comparable to the regional average. Within the wards there is considerable variation as a higher percentage of households own their homes within Ashdon Ward, while the percentage is much lower in Saffron Walden Audley, Saffron Walden Castle and Debden and Wimbish Wards. There is also a higher rate of social housing in Saffron Walden Audley and Saffron Walden Castle Wards.

Table 12.6: Housing Tenure

REGION	NUMBER OF HOUSEHOLDS	PERCENTAGE SPLIT (%)*						
		OWNED (TOTAL)	OWNED OUTRIGHT	OWNED WITH MORTGAGE / LOAN	SHARED OWNERSHIP	SOCIAL RENTED	PRIVATE RENTED	LIVING RENT FREE
East of England	2,423,035	68	33	35	1	16	15	1
Essex	581,589	71	35	37	1	14	13	1
Uttlesford	31,316	72	34	38	1	13	13	2
LIA (Wards)								
Ashdon Ward	674	75	37	38	3	11	9	3
Saffron Walden Audley Ward	2,238	66	38	28	1	17	15	2
Saffron Walden Castle Ward	2,009	65	33	32	1	19	14	1
Saffron Walden Shire Ward	2,263	72	32	40	1	12	13	1
Debden & Wimbish Ward	785	61	32	29	1	10	27	1
LIA Average		68	34	33	1	14	16	2

Source: ONS, Census 2011 KS402EW – Tenure

** Percentages do not add up to 100% due to rounding.*

12.30 The cost of an average house is estimated to be 12 times the average income in Uttlesford. There are just under 5,000 affordable rented homes in the Uttlesford (Ark Consultants, 2020). However, the number of rough sleepers across the district has generally stayed low with no rough sleepers identified during the 2018 annual count (ECC, 2019a).

12.31 There is provision of supported accommodation for older people in the local area. Based on a review of Care Quality Commission data, there are three care homes for older people within the LIA as shown in **Table 12.7**.

Table 12.7: Care Homes within the LIA

NAME	APPROXIMATE DISTANCE FROM SITE (KM)	CARE HOME'S BEDS	REGULATED ACTIVITY - RESIDENTS REQUIRING NURSING OR PERSONAL CARE	SERVICE TYPE - CARE HOME SERVICE WITH NURSING	SERVICE TYPE - CARE HOME SERVICE WITHOUT NURSING	SERVICE USER BAND - OLDER PEOPLE	SERVICE USER BAND – DEMENTIA
Hatherley Care Home Limited	1.2	37	Y	Y		Y	Y
Stanley Wilson Lodge Care Home	1.3	75	Y	Y		Y	Y
Highfield Care Home	1.8	60	Y	Y		Y	Y
Source: Care Quality Commission (2021)							

Education and Skills

12.32 There are six day nurseries within the Saffron Walden Ward and one within Ashdon Ward. There are six primary schools and one secondary school within Saffron Walden, as well as four primary schools outside of Saffron Walden but just within 5km of the Site. Information on these schools is provided in **Table 12.8**. The data indicates that there is some capacity in primary schools within Saffron Walden and the surrounding areas, but that the secondary school is over capacity. The next nearest secondary school is Joyce Frankland Academy in Newport, approximately 5.1km to the south-west, which has existing capacity. Both secondary schools have sixth form provision.

Table 12.8: LIA Schools Capacity

SCHOOL	TYPE	DISTANCE FROM SITE (KM)	NUMBER OF PUPILS (JAN 20)	CAPACITY
R A Butler Infant School	Primary	1.3	242	270
R A Butler Junior School	Primary	1.3	378	360
St Thomas More Catholic Primary School, Saffron Walden	Primary	1.3	206	210
Katherine Semar Junior School	Primary	1.7	253	270
Katherine Semar Infant School	Primary	1.7	179	180

SCHOOL	TYPE	DISTANCE FROM SITE (KM)	NUMBER OF PUPILS (JAN 20)	CAPACITY
St Mary's Church of England Voluntary Aided Primary School	Primary	1.7	211	210
Saffron Walden County High School	Secondary	2.3	2,104	2,050
Wimbish Primary School	Primary	4.0	95	105
Debden Church of England Voluntary Controlled Primary Academy	Primary	4.6	86	161
Radwinter Church of England Voluntary Aided Primary School	Primary	4.7	127	105
Ashdon Primary School	Primary	4.8	76	105
Total Primary			**1,853**	**1,976**
Total Secondary			**2,104**	**2,050**
Source: Department of Education (2021)				

12.33 The Essex School Organisation Service's 10 year plan suggests that there would be capacity in primary schools within Saffron Walden over the next ten years (2021 - 2030), although it notes that the level of new housing planned in Saffron Walden would lead to a requirement for a new primary school. An application for housing development which has been approved (UTT/16/1856/DFO) to the west of the Site includes the provision of land for a primary school. Land for an extension to the school is also provided by an adjacent housing development which has also been approved (UTT/17/2832/OP). The 10 year plan also suggests that there would be capacity in Joyce Frankland Academy over the next 10 years.

12.34 The 2011 Census provides an indication of general qualification levels of the population within the LIA, area and region, as summarised in **Table 12.9**. On average, the LIA has a higher percentage of people with Level 4 qualifications, and a lower percentage of people with no qualifications. The level of qualifications varies within the wards, with higher Ashdon and Saffron Walden Audley wards having a particularly high percentage of people with Level 4 qualifications.

12.35 Across Uttlesford, the percentage of children achieving a good level of development and those achieving at least the expected level across all early learning goals has increased since 2015 and is higher than the average for Essex and England (ECC, 2019a).

Table 12.9: Educational Attainment

AREA	HIGHEST LEVEL OF QUALIFICATION (%)						
	NONE	1	2	3	4	APPRENTICE	OTHER
East of England	22.5	14.6	16.2	11.8	25.7	3.7	5.4
Essex	23.9	16.1	17.2	11.6	23.0	3.8	4.5
Uttlesford	17.7	13.9	17.2	12.0	31.9	3.3	4.0
LIA (Wards)							
Ashdon Ward	14.8	11.2	17.3	12.6	39.5	2.3	2.3
Saffron Walden Audley Ward	16.7	11.0	15.7	10.6	39.6	2.1	4.4
Saffron Walden Castle Ward	20.9	13.1	16.3	11.3	31.6	3.3	3.5

AREA	HIGHEST LEVEL OF QUALIFICATION (%)						
	NONE	1	2	3	4	APPRENTICE	OTHER
Saffron Walden Shire Ward	18.8	15.3	17.5	12.3	27.3	3.6	5.2
Debden & Wimbish Ward	11.1	13.0	20.8	15.5	33.1	3.1	3.4
LIA Average	16.5	12.7	17.5	12.5	34.2	2.9	3.8

Level 1: 1-4 O levels/CSEs/GCSEs (any grade), Entry Level, Foundation Diploma, NVQ Level 1, Foundation GNVQ, Basic / Essential Skills

Level 2: 5+ O levels / CSEs (Grade 1)/GCSEs (Grades A - C), School Certificate, 1 A level, 2-3 AS Levels/ VCEs, Intermediate / Higher Diploma, Welsh Baccalaureate Intermediate Diploma, NVQ Level 2, Intermediate GNVQ, City and Guilds Craft, BTEC First / General Diploma, RSA Diploma*

Level 3: 2+ A levels/ VCEa, 4+AS levels, Higher School Certificate, Progression / Advanced Diploma, Welsh Baccalaureate Advanced Diploma, NVQ Level 3, Advanced GNVQ, City and Guilds Advanced Craft, ONC, OND, BTEC National, RSA Advanced Diploma

Level 4: Degree (e.g. BA, BSc), Higher Degree (e.g.MA, PhD, PGCE), NVQ Level 4-5, HNC, RSA Higher Diploma, BETC Higher Level, Foundation

Source: ONS, Census 2011 KS501EW - Qualifications and students

Economic Profile

12.36 Uttlesford is generally affluent with few areas of deprivation. According to the Index of Deprivation 2019, none of the areas within Uttlesford fall within the 40% most deprived and 8 areas are within the 10% least deprived in the country. Ashdown Ward is within the 40% least deprived neighbourhoods in the country, while Saffron Walden Audley Ward is within the 10% least deprived neighbourhoods as shown in **Table 12.10**.

Table 12.10: Indices of Deprivation

LOWER-LAYER SUPER OUTPUT AREAS (LSOA)	RANK*
Uttlesford 001A (Ashdon Ward)	22,961 (40% least deprived)
Uttlesford 001B (Saffron Walden Audley Ward)	32,811 (10% least deprived)
Uttlesford 001C (Ashdon Ward)	26,974 (20% least deprived)
Uttlesford 002D (Saffron Walden Castle Ward)	25,552 (30% least deprived)
Uttlesford 002E (Saffron Walden Shire Ward)	26,351 (20% least deprived)
Uttlesford 002F (Saffron Walden Shire Ward)	26,709 (20% least deprived)
Uttlesford 002G (Saffron Walden Shire Ward)	29,080 (20% least deprived)
Uttlesford 002B (Saffron Walden Audley Ward)	29,240 (20% least deprived)
Uttlesford 004D (Debden & Wimbish Ward)	29,390 (20% least deprived)
Source: Ministry of Housing, Communities & Local Government (2019) ** Rank out of 32,844 LSOAs in England, in which 1 is the most deprived LSOA.*	

12.37 Uttlesford has very low rates of children in care and child poverty. However, Saffron Walden Castle Ward has 9.4% - 13.2% of children in low-income families, while Saffron Walden Shire Ward has 7% - 9.3%of children in low-income families. This compares to only 1.7% - 6.9% in Ashdon, Debden and Wimbish Ward and Saffron Walden Audley Wards (Organisational Intelligence and ECC, 2016).

12.38 **Table 12.11** provides data from the 2011 census on the proportion of the population who are

economically active and inactive as well as employed and unemployed. The data indicates that Uttlesford and the LIA have a higher percentage of the population that are economically active compared to the regional average. The percentage of the population in employment is also higher and consequently unemployment is lower than the regional average.

12.39 There is some variation within the wards, with Debden and Wimbish Ward having a high percentage of the population in employment and relatively low unemployment, as well as low percentage of the population economically inactive. Ashdon Ward on the other hand has a higher percentage of the population in retirement while Saffron Walden Castle Ward has a higher level of unemployment compared to the other wards.

Table 12.11: Key Economic Activity Data for all Residents Aged 16-74 Years

AREA	ALL USUAL RESIDENTS AGED 16 TO 74	ECONOMICALLY ACTIVE (%)*	ECONOMICALLY ACTIVE: IN EMPLOYMENT (%)	ECONOMICALLY ACTIVE: UNEMPLOYED (%)	ECONOMICALLY INACTIVE (%)**	ECONOMICALLY INACTIVE: RETIRED (%)
East of England	4,245,544	71.6	64.8	3.8	28.4	14.4
Essex	1,011,611	71.1	64.6	3.8	28.9	15.4
Uttlesford	57,086	74.4	69.4	2.7	25.6	13.5
LIA (Wards)						
Ashdon Ward	1,247	72.7	67.8	2.2	27.3	14.0
Saffron Walden Audley Ward	3,388	73.8	68.2	3.0	26.2	13.1
Saffron Walden Castle Ward	3,463	74.6	69.1	3.4	25.4	13.3
Saffron Walden Shire Ward	4,142	77.5	72.1	3.1	22.5	10.4
Debden & Wimbish Ward	1,765	80.1	75.8	2.0	19.9	9.6
LIA Average		75.5	70.6	2.7	24.3	12.1

Source: ONS Census 2011 - KS601EW to KS603EW

**Includes people in part-time and full-time employment or those who are self-employed*

***Includes people who are retired, students, long-term sick, looking after home and/or family etc*

12.40 More recent estimates from the ONS annual population survey indicated that for the year 2020[1] the percentage of economically active population (aged 16-64) in Uttlesford was 77% compared to the East England average of 80%, while the percentage of the population in employment was 75% compared to the East England average of 77%. However, the unemployment rate remains lower than the East England average (3.7% compared to 3.8%).

12.41 The Business Register and Employment Survey (2019) provides data on the number of jobs held by employees broken down by industry, which is shown in **Table 12.12**. Within Uttlesford, transport & storage (inc postal) and professional, scientific & technical accounts for the greatest proportion of employment. There is significant variation within the LIA.

1 Projections are based on demographic trends which pre-date the COVID-19 pandemic.

Table 12.12: Employment by Industry Sector in 2019

INDUSTRY SECTOR	ASHDON (%)	SAFFRON WALDEN AUDLEY (%)	SAFFRON WALDEN CASTLE (%)	SAFFRON WALDEN SHIRE (%)	DEBDEN AND WIMBISH (%)	UTTLESFORD (%)	ESSEX (%)	EAST OF ENGLAND (%)
Agriculture, forestry & fishing	0.0	0.0	1.0	0.0	0.0	1.1	0.8	0.9
Mining, quarrying & utilities	0.0	0.7	0.0	2.0	0.0	0.9	1.0	1.0
Manufacturing	16.7	2.1	10.0	14.0	12.5	6.8	6.8	7.6
Construction	16.7	1.1	7.5	4.0	11.2	5.7	7.8	6.0
Motor trades	0.0	0.9	1.0	3.0	5.0	1.8	2.7	2.4
Wholesale	0.0	0.4	10.0	8.0	0.0	4.0	4.4	4.3
Retail	4.4	14.3	12.5	14.0	0.0	5.7	9.3	9.2
Transport & storage (inc postal)	12.5	1.7	1.5	1.6	0.0	20.5	5.1	4.9
Accommodation & food services	2.2	8.6	5.0	0.4	18.8	9.1	6.9	6.9
Information & communication	6.7	1.4	5.0	6.0	3.8	2.8	3.4	3.8
Financial & insurance	2.5	6.4	1.0	0.0	0.0	1.8	2.9	2.5
Property	1.1	2.1	1.0	0.8	0.0	1.4	1.9	1.7
Professional, scientific & technical	5.6	12.9	5.0	7.0	5.0	10.2	8.8	9.6
Business administration & support services	11.1	2.1	7.5	4.0	6.2	6.8	8.1	10.2
Public administration & defence	0.0	10.0	0.0	0.4	12.5	2.8	3.1	3.3
Education	5.0	10.0	10.0	10.0	12.5	6.8	9.2	9.2
Health	10.0	5.0	20.0	14.0	2.5	5.7	13.2	11.9
Arts, entertainment, recreation & other services	2.2	14.3	7.5	6.0	7.5	3.4	4.6	4.5
Source: ONS Business Register and Employment Survey (2020)								

Recreation, Leisure and Tourism

12.42 Saffron Walden is a medieval town with a rich heritage of historic buildings. The Visit Saffron Walden tourist website highlights a number of attractions including the Saffron Walden Museum, Audley End House and Gardens, Bridge End Garden, Fry Art Gallery, Saffron Hall and One Minet Skate Park.

12.43 Indoor leisure facilities include Lord Butler Leisure Centre, which has a 4-court sports hall, a main and teaching pool, two squash courts and the largest health and fitness facility in the District. Adjacent to the leisure centre is the Turpin's Indoor Bowls Club. Facilities for community sports are also provided by some of the schools in Saffron Walden, including Dame Bradbury School (independent school) and Saffron Walden County High Sports Centre (Knight, Kavanagh & Page Ltd, 2019a). Saffron Walden also has 13 football pitches, 2 grass rugby pitches, 3 cricket pitches, 1 hockey pitch, 7 locations for tennis and 2 locations for netball. However, there is a shortfall of football, cricket and rugby provision based on current and/or future demand (Knight, Kavanagh & Page Ltd, 2019b).

12.44 UDC's Open Space Assessment (Knight, Kavanagh & Page Ltd, 2019c) identified the following open space provision within Saffron Walden:

- Five parks and gardens, one of which is rated as low quality while the rest are rated as high quality and high value;
- Three natural and semi-natural greenspaces, one of which is rated as low quality, while the rest are rated as high quality and high value;
- Eleven amenity greenspaces, three of which are rated as low quality, one rated as low value and the remaining rates as high quality and high value;
- Six provisions for children and young people, three of which are rated as low quality, with the remainder rated as high quality and high value; and
- Five allotments, two of which are rated as low value, while the rest are rated as high quality and high value.

12.45 Out of seven sites classed as parks and gardens in Uttlesford, five are located within Saffron Walden. The largest is The Common (5.53ha) followed by Bridge End Garden (3ha). Both sites were the highest scoring sites in terms of quality. An online survey carried out for the Open Space Assessment found that these two sites along with Audley End House and Gardens were one of the most frequently visited sites by respondents. Two amenity greenspaces (Blacklands Avenue and Seven Devils Lane and Anglo American Playing Fields) within Saffron Walden were also rated as within the four highest scoring in terms of quality. The Saffron Walden Skate Park was the highest scoring site for quality and value in terms of provision for children and young people.

12.46 The UDC Open Space Study Standards Paper (Knight, Kavanagh & Page Ltd, 2019d) identifies deficiencies and surpluses in open space provision. The provision in Saffron Walden in terms of open space per 1,000 population is shown in **Table 12.13**. Saffron Walden was assessed to have sufficient current provision of parks and gardens and allotments when compared to the recommended quality standards for Uttlesford, but a shortfall of natural and semi-natural greenspace, amenity greenspace and play provision. Compared to the Fields in Trust (FIT) Guideline Standards, there is a shortfall in provision of parks and gardens and natural and semi-natural greenspace.

Table 12.13: Open Space Provision within Saffron Walden Compared to Recommended Standards

OPEN SPACE TYPE	HECTARES PER 1,000 POPULATION		
	CURRENT PROVISION	RECOMMENDED QUALITY STANDARDS	FIT GUIDELINE STANDARDS
Parks and gardens	0.53	0.1	0.8
Natural and semi-natural greenspace	0.07	5.81	1.8
Amenity greenspace	0.8	1.6	0.6
Allotments	0.32	0.2	0.25
Play provision	0.08	0.1	-

12.47 No PRoW are registered crossing the Site. The nearest PRoW is located to the north of the Site, on the other side of Radwinter Road, which eventually joins with Redgates Lane. There is also a large network of PRoWs in the wider area to the east of the Site.

Health

12.48 It is considered that the majority of the baseline information provided above also aids in outlining the existing wider health baseline to the area. In addition, this section looks at some indicators more directly linked to health. A high level review of the PHE website shows the population of Uttlesford compares favourably in some health indicators, 74.7% of people are physically active compared with a national average of 66.9% and a regional average of 69.7%. Similarly, the percentage of adults classified as obese or overweight is comparatively favourable with Uttlesford having 57.6% compared with the national average of 63.3% and a regional average of 66.6%.

Life Expectancy

12.49 The PHE website also shows that the average male life expectancy at birth for Uttlesford is 82.9 years, which is favourable when compared with the regional average of 80.5 years and the national average of 79.8 years. Similarly, for females the Uttlesford, the average life expectancy at birth is 85.8 years, which is higher than the regional average of 83.9 years and the national average of 83.4 years.

Access to Healthcare

12.50 Uttlesford is located within the West Essex Clinical Commissioning Group (CCG). According to data from a 2018 survey, 80.2% of patients in the West Essex CCG reported a positive experience of their GP practice. This is lower than the average for both England (83.75%) and the NHS Eastern Region (83.3%) but is in line with the combined average for all CCGs in Essex (80.3%) (ECC, 2019a).

12.51 There are two GP surgeries and two dental practices within 5km of the Site. There is a community hospital in Saffron Walden, however, the closest large hospital with accident and emergency is at Addenbrookes, Cambridge, approximately 19km away. **Table 12.14** details healthcare facilities within 5km of the Proposed Development.

Table 12.14: Healthcare Facilities within 5km

TYPE	NAME	APPROX. DISTANCE FROM SITE (KM)*	NO OF REGISTERED PATIENTS	TOTAL GP HEADCOUNT	ACCEPTING NEW PATIENTS
GP	The Gold Street Surgery	1.7	10,593	9	Yes
	Crocus Medical Practice	1.8	12,973	11	Yes
Dentist	Courtyard Dental Practice	1.4	-	-	-
	The Walden Dental Clinic	1.8	-	-	-
Hospital	Saffron Walden Community Hospital	0.6	-	-	-
Source: NHS, NHS Digital (2021)					

12.52 Although both GP surgeries are accepting new patients, it's noted from a consultation response by West Essex CCG with regard to a nearby development, that based on their calculations, both surgeries do not have spare capacity (West Essex CCG, 2020).

Climate Change

12.53 Climate change could have an impact on health and healthcare facilities. Climate change may result in an increase in the frequency and intensity of heatwaves. The "UK Climate Change Risk Assessment 2017" (Committee on Climate Change, 2016) estimates that heat-related deaths in the UK could more than double by the 2050s. While there is predicted to be some decline in cold-related deaths, it is only predicted to decrease slightly. The risk assessment noted that hospital and GP visits increase in hot weather. There is also the possibility of an increase in infectious diseases and pests due to rising temperature. Climate change may, therefore, increase pressure on local health facilities.

12.54 The climate change risk assessment also notes that in addition to the risk of accidents due to flooding, there is also emerging evidence of the impacts of flooding on mental health, which could also result in additional pressure on local health facilities. Increased flooding may also result in disruption of health services and access to health facilities, as well as economic cost. The June 2021 Flood Risk Assessment, undertaken by Cotswold Transport Planning Ltd, concludes that the Site is located within Flood Zone 1 and is at low/negligible risk of flooding. Therefore, as the risk of flooding from the Site is low, it is not expected that there will be a significant risk of increasing pressure on health services as a result of flooding events.

Evolution of the Baseline Conditions without Development

12.55 It is anticipated that in the absence of the Proposed Development the local, regional and national population will continue to grow and age. However, the rate and distribution of growth and demographic change are complex and difficult to predict, affected by a range of factors within the private and public sectors including: housing provision, infrastructure and public service provision; and public policy.

12.56 The dynamic modelling that would be required to provide a range of likely baseline evolution

scenarios is beyond the reasonable scope of this assessment and would, in any event, contain uncertainty and potential counterfactuals. Therefore, to provide a reasonably practicable method for assessment a static or unchanging baseline has been assumed.

Predicted Impacts

Construction Phase

Direct, Indirect and Induced Employment

12.57 The Proposed Development would create a number of temporary jobs during the construction phase, which is anticipated to last approximately seven years. The construction phase would also result in indirect jobs created through the supply chain, and potentially a further number of induced jobs because of spend of earnings of those employed in the works on-site or in its supply chain.

12.58 Based on an estimated Proposed Development GVA of approximately £33 million and average gross output per construction industry employee of £48,750 (Rhodes, 2019) the number of job years for the Proposed Development is estimated to be 671. Over an estimated 7 year build program this is equivalent to the creation of 67 Full Time Equivalent (FTE) jobs during the construction phase.

12.59 Construction of the Proposed Development would also result in indirect jobs created through the supply chain, and potentially a further number of induced jobs because of spend of earnings of those employed in the works on-site or in its supply chain. It is estimated that for every construction job created 1.2 indirect and induced jobs are created elsewhere in the supply chain and wider economy induced (Lichfields and Home Builders Federation, 2018 and Investment and Performance Board, 2014, noting a range of multipliers are available and the lowest from these documents has been used as a conservative estimate), giving a total additional 81 FTE jobs during the construction phase. However, due to substitution and displacement effects the overall job contribution is likely to be lower than this figure (a quantitative assessment of this is beyond the scope of this assessment).

Health

12.60 Other chapters within this ES, namely Transport (Chapter 13), Air Quality (Chapter 7) and Noise and Vibration (Chapter 10) have outlined expected health impacts during construction in respect of each individual environmental topic. Predicted significant health impacts during construction include:

- The potential for dust emissions to occur during construction activities. Dust emissions can lead to or exacerbate respiratory disorders but any impacts would be short-term in duration and temporary; and
- The potential for noise emissions to occur. Noise emissions can lead to increased levels of stress and anxiety which can harm physical and mental health and wellbeing.
- The potential for vibration impacts to occur. Vibration emissions can lead to increased levels of stress and anxiety which can harm physical and mental health and wellbeing. The HUDU Rapid HIA checklist (see **Appendix 12.1**) notes that construction works will be undertaken in line with current best practice measures to prevent or mitigate the level of impacts relating to dust, noise and vibration.

12.61 A number of mitigation measures have been identified in respect of construction dust, noise and vibration. Such measures are outlined in paragraphs 7.113 and 11.99 respectively.

Operational Phase

Population

12.62 The Proposed Development would result in an increase in population of the local area, which in turn would increase demand on public services. The direct effects of an increase in population are largely subjective and relative to the size of the wider population. An estimate of the potential increase in population on completion of the Proposed Development, has been made in **Table 12.15** based on 2011 census information on average household size within the LIA. This is based on the assumption that all residents of the new residential dwellings will be new residents from outside the local area.

12.63 The Proposed Development on completion would result in an increase of approximately 501 people, which represents an increase of approximately 2.9% of the population in Saffron Walden and 2.3% increase of the population within the LIA (based on 2019 population estimates).

Table 12.15: Estimated New Residents

RESIDENTIAL UNIT TYPE	NUMBER (INDICATIVE)	AVERAGE HOUSEHOLD SIZE*	ESTIMATED RESIDENTS
One bedroom flat	31	1.4	43
Two bedroom flat	30	1.9	58
Two bedroom house	73	1.9	138
Three bedroom house	78	2.6	200
Four bedroom house	21	3.0	62
Total	233	-	501
* Source: ONS Census 2011 - DC4405EW - Tenure by household size by number of bedrooms			

Housing Supply

12.64 Based on completion of 40 units a year, this would equate to approximately 5.7% of the annual target of 706 dwellings a year. The Proposed Development is likely to include a mix of one and two bedroom flats and two to four bedroom houses, providing a diverse supply of dwellings and increasing choice and availability of housing in the district. The exact mix of market housing units would be fixed through the reserves matters applications following outline planning permission.

12.65 The Proposed Development includes for 40% affordable housing, consisting of affordable rented accommodation (28%) and shared ownership properties (12%). The baseline review identified that the cost of an average house in the district far exceeds the average income, indicating the need for affordable housing. The Proposed Development's provision of affordable housing would increase the quantity of affordable housing which would help to address the accommodation needs of residents not able to afford the house prices within the district.

Economic Growth and Employment

12.66 The Proposed Development would provide 233 new households. Each household would be expected to spend a proportion of their household income in the local area on a wide range of goods and services. It is estimated that, on completion, total annual household expenditure would be £7.3 million based on an average weekly household spend of £603 in the UK in the financial year ending 2019 (ONS Family spending in the UK, 2021). Whilst publicly accessible information on the distribution of household spending is not available, it is reasonable to assume a proportion of this spending will be captured within the local economy and contribute to job generation.

12.67 The Proposed Development is also estimated to house approximately 356 new working age (16 to 75 year olds) people, which is approximately 0.7% of the employed people in the district. Whilst specific employment outcomes are difficult to predict and a portion of the residents would have moved from within the district, it is anticipated that some new staff will become available for a range of industries including public services.

Public Services - Education

12.68 The Proposed Development would increase demand for educational facilities. The Essex School Organisation Service's 10 year plan forecasting methodology uses the following factors to forecast likely demand for school places created by new development:

- New house - 0.3 additional primary school pupils and 0.2 additional secondary school pupils;
- New flat - 0.15 additional primary school pupils and 0.1 additional secondary school pupils; and
- One-bedroom units – no additional school pupils.

12.69 In addition, the ECC Developers' Guide to Infrastructure Contributions (2019b) also provides a factor of 0.09 per flat and 0.045 per house for early years and childcare and 0.01 per one bedroom flat, 0.02 per two bedroom flat and 0.04 per house for post 16 year old education.

12.70 Based on these factors, the completed Proposed Development would create the need for approximately

- 10 additional early years and childcare provision;
- 56 additional primary school;
- 37 additional secondary school places; and
- 8 post 16 years old education.

12.71 It should be noted that the demand would not arise all at once but would be staggered over the construction period, as approximately 40 units would be completed per year.

12.72 The Essex School Organisation Service's 10 year plan suggests that there would be capacity in secondary schools and primary schools over the next ten years, although a new primary school may be required to meet the demand from new housing. Land for provision of a new primary school has been included in the housing development schemes (UTT/16/1856/DFO and UTT/17/2832/OP) located just to the west of the Site.

Health – HUDU Rapid HIA checklist

12.73 The HUDU Rapid HIA checklist included in **Appendix 12.1** has considered the potential health impacts as a result of the Proposed Development across eleven key topic areas. Across the eleven topics of focus, none of the relevant health considerations are expected to see a negative impact. A large number of the points considered do have minor positive or neutral benefits for existing and new residents in areas such as housing design and inclusivity, and access to open space (see below).

12.74 As previously outlined, other chapters within this ES have considered impacts in areas that may affect Human Health i.e. Transport (Chapter 13), Air Quality (Chapter 7) and Noise and Vibration

(Chapter 10). However, none of these chapters list any potential significant health impacts during the operational phase of the Proposed Development.

Public Services - Healthcare Facilities

12.75 The Proposed Development would result in approximately 501 new residents, which is an increase of approximately 0.2% of the population within the West Essex CCG and an increase of 2.1% of the registered patients at GP surgeries within 5km of the Site. This will result in additional pressure on the local health service provision.

Open Space

12.76 The Masterplan for the Proposed Development provides for significant new green infrastructure and recreational facilities for the existing and new communities. The Masterplan includes for approximately 10 ha of public open space, which accounts for approximately 55% of the Site. The public open space includes for formal open space with play areas, parkland, a central green corridor with informal play and pedestrian / cycle links. Pedestrian and cycle links are proposed to run around the periphery of the Site as well as within the green corridor and parkland.

12.77 These features would provide benefits at a local level for the existing and new communities. The green spaces and play areas would also indirectly bring beneficial health and wellbeing benefits, helping to meet local health priorities in terms of increasing use of the local natural environment, ensuring more children are at a healthy weight and encouraging daily activity.

Crime Reduction and Safety

12.78 The Masterplan for the Proposed Development has been designed to minimise the potential for crimes to occur and the use of active frontages and overlooking of key spaces should minimise the potential for crime. Similarly measures to promote security and safety have been included within the final masterplan again promoting safety throughout the development. Overall it is therefore considered that the Proposed Development would help to design out crime and increase the perception of safety.

Evaluation of Predicted Impacts

Construction

Direct, Indirect and Induced Employment

12.79 The creation of construction jobs and the indirect and induced employment over the seven year construction period would provide employment at a district or regional level (i.e. moderate receptor). The employment impacts would be medium-term and temporary as well as low in terms of employment numbers and, therefore, of minor magnitude. The effects of the Proposed Development on employment creation would be of **minor beneficial** significance.

Health

12.80 The significant impacts to human health discussed within other chapters are summarised as follows:

- The potential for dust emissions to occur during construction activities could affect sensitive receptors i.e. human health. However, the risk magnitude to human health as a result of dust emissions is predicted to be either ‘low risk’ or ‘**negligible**’ and any impacts would be temporary and would occur over a short-term duration.
- The potential for noise emissions to occur - a high magnitude of impact was predicted at

Turnip Hall Farm, a highly sensitive receptor when construction works are undertaken close to the Site boundary. It is, however, noted that the impact would be temporary in nature and would only occur for a short duration.

- The potential for vibration impacts to occur - vibration compaction works undertaken close to the Site boundary are predicted to result in a moderate magnitude of impact for Turnip Hall Farm. When combined with a high sensitivity receptor (i.e. Turnip Hall Farm) this would result in a **moderate adverse** effect which is significant. It is, however, noted the impact would be temporary in nature and would only occur for a short duration.

Operation Phase

Population

12.81 The small increase in the population in the local area would be of minor magnitude. The sensitivity of the receptor is low. The direct long term effects of the increased population would be of **minor adverse** significance.

Housing Supply

12.82 The Proposed Development would make a valuable contribution to the housing supply in the district. The permanent direct impact of additional housing would be of minor magnitude on a receptor of low value. The effects of the Proposed Development on housing provision would be of **minor beneficial** significance.

Economic Growth and Employment

12.83 The increase in local spending and contribution of employees is relatively small, but would be a long term / permanent impact. The magnitude of impact would be minor on a low value receptor. The effect is considered to be of **minor beneficial** significance.

Public Services - Education

12.84 The Proposed Development would result in increased demand on educational facilities in the local area. As the baseline review indicated that there is capacity within primary and secondary schools, the magnitude of the increase in demand is considered to be minor. The effect of the Proposed Development on educational facilities in the local area / district (low value receptor) is considered to be of **minor adverse** significance.

Health – HUDU Rapid HIA checklist

12.85 For all of the topics considered within the HUDU Rapid HIA checklist the potential impacts are expected to be minor/neutral in magnitude. The effects will be long term permanent and irreversible and are considered to be of **minor beneficial** significance.

12.86 No significant impacts to human health during the operational phase of the Proposed Development have been identified within other topics within this ES.

Public Services - Healthcare Facilities

12.87 The Proposed Development would result in permanent increased demand on healthcare facilities in the local area. As the Proposed Development would result in an increase of approximately 0.2% of the population within the West Essex CCG and an increase of 2.1% of the registered patients at GP surgeries, the magnitude of the increase in demand is considered to be minor. The effect of the Proposed Development on healthcare facilities in the local area and region (moderate value receptor) is considered to be of **minor adverse** significance.

Open Space

12.88 The Proposed Development would provide public open space for residents of the development and the existing local community. The direct permanent impact is considered to be positive and of minor magnitude. Therefore the effect on the local (low value) receptor would be of **minor beneficial** significance.

Crime Reduction and Safety

12.89 The measures included in the final design of the Proposed Development will help to design out crime and increase the feeling of safety for residents and visitors alike. The direct permanent impact is considered to be positive and of minor magnitude. Therefore, the effect on the local (low value) receptor would be of **minor beneficial** significance.

Mitigation

12.90 No significant effects are predicted in relation to socio-economic considerations and, therefore, no additional mitigation is required.

12.91 Mitigation measures for potential human health impacts relating to Transport (Chapter 13), Air Quality (Chapter 7) and Noise and Vibration (Chapter 10) are detailed within those respective chapters. Mitigation will include:

- A site specific CEMP will be written and will contain mitigation measures recommended within the Institute of Air Quality Management guidance; and
- A range of mitigation measures aimed at removing or reducing the potential impacts of noise and vibration would also be included in the aforementioned CEMP.

Residual Effects

12.92 In the absence of any mitigation for socio-economics, the residual effects are the same as the predicted effects.

12.93 Following implementation of the aforementioned mitigation for dust, no significant impacts are expected in relation to Human Health.

12.94 With regards to noise and vibration, a moderately significant adverse impact is expected to occur as a result of noise and vibration emissions for one sensitive receptor (Turnip Hall Farm) when construction works are being undertaken at the edge of the Site closest to this receptor. However, this is expected to be a short-term and temporary impact to human health for residents at this receptor.

Cumulative Effects

12.95 Six consented and planned developments in a 2km radius of the Proposed Development have been considered in relation to possible cumulative effects. This includes 5 residential developments, providing approximately 732 residential units and a 70 bed care home and 49 retirement apartments (not including the Proposed Development).

12.96 The consented and planned residential developments would provide considerable benefit in terms of meeting the housing needs in the district and providing temporary employment during the construction phases. The 70 bed care home would also provide for some employment during the operation phase. Nevertheless, the combined developments would also result in additional pressure on existing public infrastructure such as educational and health facilities.

12.97 **Table 12.16** details the cumulative developments considered.

Table 12.16: Cumulative Developments

DEVELOPMENT	NO OF UNITS	ESTIMATED POPULATION*	ESTIMATED PRIMARY SCHOOL CHILDREN	ESTIMATED SECONDARY SCHOOL CHILDREN
Land South of Radwinter Road (UTT/16/1856/DFO)	230	552	69	46
Land South of Radwinter Road (UTT/20/2007/FUL)	49 retirement apartments and 70-bed care home	168	0	0
Land North of Shire Hill Farm (17/2832/OP)	100	240	30	20
Land East of Thaxted Road (18/0824/OP &19/2355/DFO)	150	360	45	30
Land at Ashdon Road UTT/13/2423/OP	167	401	50	33
Land East of Little Walden Road (UTT/16/2210/OP)	85	204	26	17
Proposed Development	233	501	56	37
Total	1,014	2,426	276	183
** Based on an average 2.4 people per dwelling for the cumulative developments apart from the retirement apartments (assumed to be two people per apartment) and care home.*				

12.98 The cumulative developments combined with the Proposed Development would result in an increase in approximately 2,426 residents and approximately 276 primary school children and 183 secondary school children. Two of the cumulative developments (UTT/16/1856/DFO and 17/2832/OP) include the provision of land for a primary school, while the other cumulative developments include for financial contributions towards education provision. The majority of the cumulative developments also include for financial contributions towards healthcare.

12.99 With the inclusion of land for primary school provision and financial contributions towards education and healthcare, no significant cumulative effects are predicted.

Monitoring

12.100 As no significant effects are predicted which require mitigation, no monitoring is necessary. **Table 12.17** provides a summary of the socio-economic impacts.

Table 12.17: Summary of Impacts: Socio-Economics

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/ BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/ LONG TERM	SIGNIFICANCE		ADVERSE/ BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/ LONG TERM	SIGNIFICANCE
Construction												
Direct, indirect and induced employment	Reg / Dist	Mod	Min	Ben	Rev	ST	Min	Not applicable	Ben	Rev	ST	Min
Operation												
Population increase	Loc	Low	Min	Adv	Irrev	LT	Min	Not applicable	Adv	Irrev	LT	Min
Housing provision	Dist / Loc	Low	Min	Ben	Irrev	LT	Min	Not applicable	Ben	Irrev	LT	Min
Increase in economic growth and employment	Dist / Loc	Low	Min	Ben	Irrev	LT	Min	Not applicable	Ben	Irrev	LT	Min
Increase demand in education	Dist / Loc	Low	Min	Adv	Irrev	LT	Min	Not applicable	Adv	Irrev	LT	Min
Increase demand for healthcare	Reg / Dist	Mod	Min	Adv	Irrev	LT	Min	Not applicable	Adv	Irrev	LT	Min
Open space	Loc	Low	Min	Ben	Irrev	LT	Min	Not applicable	Ben	Irrev	LT	Min
Crime Reduction and Safety	Loc	Low	Min	Ben	Irrev	LT	Min	Not applicable	Ben	Irrev	LT	Min

Key:

Reg: Regional	Loc: Local	Adv: Adverse	Min: Minor	Rev: Reversible	LT: Long Term
Dist: District	Neg: Negligible	Mod: Moderate	Ben: Beneficial	Irrev: Irreversible	ST: Short Term

Transport

13

13.0 Transport

Introduction

13.1 This chapter addresses the transport related environmental impacts of the Proposed Development. It has been prepared by Cotswold Transport Planning (CTP) to assess the impacts of the Proposed Development in relation to the likely significant effects it would have on:

- Severance;
- Driver delay;
- Pedestrian delay and amenity;
- Accidents and safety;
- Hazardous loads; and
- Fear and intimidation.

Potential Impacts

13.2 In assessing the above impacts, this chapter considers the following matters:

- 2023 Baseline Year;
- Assessment year (2026) baseline conditions (including committed development);
- Proposed Development construction;
- Proposed Development with associated highway improvements (2026);
- Appropriate measures to mitigate any unacceptable impact; and
- Residual impacts.

13.3 Due to the ongoing Coronavirus pandemic, it has not been possible to collect baseline traffic flows in either 2020 or 2021. As such, it has been agreed with the Highway Authority that baseline traffic data will be taken from other recent local planning applications. It has been agreed with the Highway Authority that future year assessments should be undertaken in 2026 on the basis that this is five years from submission of the planning application.

13.4 The assessment year of 2026, therefore, represents the worst case for the percentage impact increase of development traffic on the highway network leading to the greatest environmental effects for all criteria apart from driver delay. Driver delay is considered in more detail in the Transport Assessment. **(Appendix 13.1)**.

13.5 In addition to consideration of the impact of the Proposed Development, this chapter of the ES defines and provides a description of the derivation of the traffic flows which have been utilised in the following areas of the EIA:

- Air Quality (Chapter 7); and
- Noise and Vibration (Chapter 10).

Methodology

Legislation and Guidance

13.6 Guidance on the assessment of the impact of traffic movements on the environment is given in the Institute of Environmental Assessment (IEA), now known as the IEMA, document 'Guidelines for the Environmental Assessment of Road Traffic' (IEMA, 1993). This assessment generally follows these guidelines as they relate to traffic and transport.

13.7 In order to assess the transport impacts, a Transport Assessment (TA) (see **Appendix 13.1**) has been prepared. The Transport Assessment follows the guidance set out in the NPPF and associated NPPG.

13.8 Policy Guidance, as it pertains to the transportation issues of the Proposed Development, are set out in Section 4 of the Transport Assessment (**Appendix 13.1**) and includes:

- NPPF (2021);
- NPPG Travel Plans, Transport Assessment and Statements in Decision Taking (2014);
- Essex Transport Strategy (Local Transport Plan for Essex, 2011);
- Adopted Uttlesford Local Plan (2005);
- New Local Plan – First Consultation; and
- Saffron Waldon Neighbourhood Plan (Unadopted, 2020).

Assessment Methodology

13.9 This section sets out the methodology used for baseline data derivation and the assessment of traffic and transport impacts of the Proposed Development in both the construction and operational phases. This chapter has been informed by the TA and the methodology set out here is consistent with that employed by the TA.

Consultation

13.10 Pre-application meetings have been held with ECC, in their role as local highway authority. The purpose of these meetings was to agree the scope and methodology of the assessment required. It was agreed that the following junctions on the local highway network should be assessed:

- Radwinter Road / Proposed Site Access;
- Radwinter Road / Linden Access;
- Radwinter Road / Elizabeth Road / Horn Brook;
- Radwinter Road / Thaxted Road / East Street / Chatters Hill;
- Thaxted Road / Consented Link Road;
- Thaxted Road / Peaslands Road;
- London Road / Borough Lane;
- London Road / Audley End Road / Newport Road;
- High Street / George Street / Abbey Lane;
- High Street/ Church Street;

- High Street / Bridge Street / Castle Street / Myddylton Place;
- Church Street / Castle Hill / Ashdon Road / Common Hill;
- Ashdon Road / Chatters Hill; and
- Ashdon Road / Elizabeth Way.

13.11 It was agreed that for the purpose of the TA, the network should be assessed in 2026, five years from the date of submission of the planning application.

13.12 There are three consented housing schemes to the west of the Proposed Development which, together secure a link road running through the respective land parcels that will connect Radwinter Road with Thaxted Road. The delivery of the road is secured through both approved detailed layouts (where applicable) and legal agreements.

13.13 Both the Applicant and CTP are of the view that an assessment without the consented link road is not necessary on the basis that two of the three sites that will deliver the road are under construction and the third has been sold to a housebuilder and a Reserved Matters application is imminent, making it very likely to come forward, within at most, the next five years. As such, this scenario (i.e. with the consented Link Road in place) is considered in detail within this assessment. An alternative 'sensitivity test' scenario without the consented Link Road in place, is considered within the TA (see **Appendix 13.1**) at the request of ECC.

Baseline Data Collection

13.14 It is the accepted position of the Highway Authority that it has not been possible to collect new traffic data to support this assessment due to the ongoing effects of the Coronavirus Pandemic. It was, therefore, agreed that traffic data could be extracted from other Transport Assessments that have been prepared for the consented housing sites in Saffron Walden.

13.15 It has been agreed with the Highway Authority that the base flows for the 'With Link Road' scenario could be extracted from the Transport Addendum – Link Road Assessment (dated September 2018), that was prepared by Peter Brett Associates (PBA) for Land East off Thaxted Road – now referred to as the Bellway site.

13.16 At Appendix F of the PBA report, there are AM and PM peak traffic flow diagrams showing the 2023 Forecast Year Cumulative Link Road scenario. These include the reassignment of background traffic to the consented link road together with committed development traffic from the Bellway, Dianthus Land and Linden Homes sites.

13.17 The PBA report did not assess the Radwinter Road / Elizabeth Way traffic signal junction or junctions on Ashdon Road and, therefore, the base flows for these junctions have been extracted from the Highways Impact Assessment (dated April 2018) prepared by Iceni on behalf of Dianthus Land.

13.18 To factor the 2018 Iceni flows to a common base year of 2023, TEMPro growth rates have been used. The TEMPro rates have been adjusted using the 'Alternative Assumptions' function to remove the consented dwellings for the agreed committed development sites from the future year housing supply in the Uttlesford Authority Area and Uttlesford 002 MSOA. This approach has been agreed with the Highway Authority and is set out in more detail in the TA.

13.19 To obtain vehicle speed data on Radwinter Road, 4no. Automatic Traffic Counts (ATC) were installed on 12th February 2021 and collected data for a period of one week. Due to the ongoing pandemic, this data has only been used to provide vehicle speeds on Radwinter Road.

13.20 Accident data for the local road network has been obtained from ECC for the period of 5 years up to March 2021.

Transport Assessment

13.21 This section summarises how the impact of the traffic associated with the Proposed Development has been assessed both within this chapter and in the TA (**Appendix 13.1**) . The following tasks have been undertaken:

- Baseline traffic flows have been derived from the relevant reports as set out above and traffic growth applied, as required, to provide data for a common baseline year (2023). This data includes traffic flows generated by a number of committed development sites, including the three sites that together provide the committed Link Road.
- Traffic flows generated by further committed development sites, as agreed with ECC, has been added using data taken from relevant planning application documents.
- Traffic movements generated by the Proposed Development have been estimated using data extracted from the TRICS database, and then distributed throughout the study area network using 2011 Census Journey to Work data for existing local residents. This approach was agreed with ECC.
- The relative impact of the Proposed Development on the local highway network has been considered as a percentage increase in vehicles.
- 2026 future year junction capacity assessments have been carried out both for the future year baseline and for the baseline plus Proposed Development traffic. This modelling has been carried out using the JUNCTIONS 9 (ARCADY and PICADY modules) and LinSig modelling programmes as agreed with ECC.

Study Area

13.22 The IEMA guidelines suggest that the study area should include:

- Highway links where traffic flows would increase by more than 30% (or the number of Heavy Goods Vehicles (HGVs) would increase by more than 30%); and
- Any other specifically sensitive areas where traffic flows have increased by 10% or more.

13.23 Where the predicted increase in traffic flows is lower than the above thresholds, the IEMA guidelines suggest the significance of the effects can be stated to be negligible and further detailed assessment are not warranted. Furthermore, increases in traffic flows below 10% are generally considered to be insignificant in environmental terms given that daily variations in background traffic flow may vary by this amount.

13.24 Notwithstanding the above, it was agreed with ECC, as part of pre-application meetings, that the study area should consider, and undertake detailed junction modelling for all locations where the development would increase peak hour traffic flows by more than 2% and / or 30 vehicles in either peak. On this basis, a study area comprising 13 junctions has been considered as part of this assessment. In addition, due to existing capacity concerns, at the request of the Highway Authority, it was agreed to include the Thaxted Road / Peaslands Road junction despite it not meeting the above threshold for assessment.

13.25 The study area, therefore, comprises the following junctions:

- Radwinter Road / Proposed Site Access;
- Radwinter Road / Linden Access;
- Radwinter Road / Elizabeth Road / Horn Brook;
- Radwinter Road / Thaxted Road / East Street / Chatters Hill;
- Thaxted Road / Consented Link Road;
- Thaxted Road / Peaslands Road;
- London Road / Borough Lane;
- London Road / Audley End Road / Newport Road;
- High Street / George Street / Abbey Lane;
- High Street/ Church Street;
- High Street / Bridge Street / Castle Street / Myddylton Place;
- Church Street / Castle Hill / Ashdon Road / Common Hill;
- Ashdon Road / Chatters Hill; and
- Ashdon Road / Elizabeth Way.

Assessment of Significance / Assessment Criteria

Sensitivity

13.26 The sensitivity of a road or junction can be defined by the vulnerability of the user groups who may use it (e.g. elderly people or children). A sensitive area may be where pedestrian activity is high, for example, in the vicinity of a school or where this is already an existing safety issue. It should be noted that sensitivity of the receptor is judged on the sensitivity of road users (primarily pedestrians). It also takes account of the existing nature of the road e.g. an existing 'A' road is likely to have a lower sensitivity than a minor residential road.

13.27 **Table 13.1** provides a summary of the types of receptors and the sensitivity of each, defined as substantial, moderate, minor and negligible in the IEMA guidance.

Table 13.1: Sensitivity Criteria

RECEPTOR TYPE	RECEPTOR SENSITIVITY
Receptors of greatest sensitivity to traffic flow: schools, colleges, playgrounds, accident clusters, retirement homes, roads without footways that are used by pedestrians	High
Traffic flow sensitive receptors: congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, recreation facilities	Moderate
Receptors with some sensitivity to traffic flow: places of worship, public open space, tourist attractions and residential areas with adequate footway provision	Low
Receptors with low sensitivity to traffic flows and those sufficiently distance from affected roads and junctions	Very Low

13.28 An exercise has been undertaken to identify the sensitivity of each receptor in the study area. All junctions within the study area have been assessed and assigned sensitivity primarily based on the criteria set out in **Table 13.1**, as well as the assessors' experience and professional judgement.

13.29 A desktop exercise, augmented by site visits, has been undertaken to identify the sensitivity of each receptor in the study area. All road links within the study area have been assessed and assigned sensitivity, primarily based on the criteria set out in **Table 13.1** and the assessors' experience and professional judgement. The sensitivity of the junctions within the study area network is set out in **Table 13.2**.

Table 13.2: Study Area Receptor Sensitivity

JUNCTION	SENSITIVITY
Radwinter Road / Proposed Site Access	Low
Radwinter Road / Linden Access	Low
Radwinter Road / Elizabeth Road / Horn Brook	Low
Radwinter Road / Thaxted Road / East Street / Chatters Hill	Moderate
Thaxted Road / Consented Link Road	Low
Thaxted Road / Peaslands Road	Moderate
London Road / Borough Lane	Moderate
London Road / Audley End Road / Newport Road	Moderate
High Street / George Street / Abbey Lane	Moderate
High Street/ Church Street	Moderate
High Street / Bridge Street / Castle Street / Myddylton Place	Moderate
Church Street / Castle Hill / Ashdon Road / Common Hill	Moderate
Ashdon Road / Chatters Hill	Moderate
Ashdon Road / Elizabeth Way	Low

Magnitude

13.30 To assist with the judgement of the magnitude of the effect, reference will be made to the IEMA guidelines. This guidance sets out consideration, and in some cases thresholds, in respect to changes in the volume and composition of traffic to facilitate a subjective judgement of traffic effect and significance. These thresholds are guidance only and provide a starting point by which a detailed analysis will inform a subjective analysis of the effect magnitude.

13.31 It is important to note that during the construction phase, the effects assessed are temporary, not permanent, and this affects the significance attached to them.

13.32 The definition of the Magnitude of the Impact and Typical Descriptors are set out in **Table 13.3.**

Table 13.3 Magnitude of the Impact and Typical Descriptors

MAGNITUDE OF IMPACT	TYPICAL CRITERIA DESCRIPTORS
Major	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (Adverse). Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial).
Moderate	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to one (or maybe more) key characteristics, features or elements (Adverse). Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Minor	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse). Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).
Neutral	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Significance

13.33 The significance of an effect will be judged on the relationship of the magnitude of effect to the assessed sensitivity of the receptor. The predicted significance of the effect is summarised in **Table 13.4.**

Table 13.4: Significance Criteria

MAGNITUDE OF IMPACT	SENSITIVITY				
	Very High	**High**	**Moderate**	**Low**	**Very Low**
Major	Major	Major / Moderate	Moderate	Moderate / Minor	Minor
Moderate	Major / Moderate	Moderate	Moderate / Minor	Minor	Minor / Negligible
Minor	Moderate	Moderate / Minor	Minor	Minor / Negligible	Negligible
Neutral	Negligible	Negligible	Negligible	Negligible	Negligible

13.34 Likely significant effects are, therefore, concluded to be of negligible, minor, moderate or major significance and can be either beneficial or adverse. Moderate and major significance effects are considered to be significant in EIA terms.

Scope of Effects

13.35 The temporal scope of effects is described as short, medium or long term as shown below. For the operational assessment the effects are permanent, whereas for construction they will be temporary effects.

- Temporary (e.g. construction phase);
- Short-term: (e.g, less than 5 years);
- Medium-term: (e.g, 5-10 years); and
- Long-term: (e.g. for the duration of the operational phase of the development).

13.36 The IEMA set out a number of effects to be considered. Where the criteria do not provide specific thresholds by which the magnitude of such effects can be measured, the effects have been measured qualitatively, where necessary.

Severance

13.37 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic route. Whilst the IEMA Guidelines refer to the effect of traffic on severance of 30%, 60% and 90% changes producing “slight”, “moderate” and “substantial” changes in severance respectively, it is suggested that caution be applied to relying on these quanta of change. The consideration of severance in this assessment has had due regard to specific local conditions, in particular the location of pedestrian routes to key local facilities and whether crossing points are provided or not.

Driver Delay

13.38 Traffic delays to non-development traffic can occur:

- At the Site access where there would be additional turning movements;
- On highways surrounding the Site where there may be additional flow; and
- At key junctions on the nearby highway network.

13.39 Impact on driver delay is based on the quantum of change in delay derived from the junction modelling undertaken in the preparation of the TA.

Pedestrian Delay

13.40 The proposal would bring about increases in the number of vehicle movements at roads and junctions within the study area. In general terms, increases in traffic levels are likely to lead to greater increases in delay to pedestrians seeking to cross roads.

13.41 The IEMA guidelines refer to a report published by the (TRL, 1991) as providing a useful approximation for determining pedestrian delay. The TRL research concluded that mean pedestrian delay was found to be eight seconds at flows of 1,000 vehicles per hour and below 20 seconds at 2,000 vehicles per hour for various types of crossing condition.

13.42 A two-way flow of 1,400 vehicles per hour has been adopted as a lower threshold for assessment (equating to a mean 10 second delay for a link with no pedestrian facilities) in the TRL report. Below this flow, pedestrian delay is unlikely to be a significant factor. This is deemed a robust starting point for narrowing down the modelled routes within the study area. It should be noted that for controlled forms of pedestrian crossing the pedestrian delays are less.

Pedestrian Amenity

13.43 Amenity Is broadly defined as the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic. The IEMA Guidelines cite a doubling of traffic flow (or its lorry component) as representing a threshold for impact evaluation.

Accidents and Safety

13.44 Analysis of the latest five-year collision data has been undertaken on the network surrounding the Site, the geographical scope of which was agreed with the Highway Authority. The impact of additional traffic from the proposals is considered in terms of magnitude of traffic increase and the existing accident record data and any committed highway improvements.

Hazardous Loads

13.45 The IEMA Guidelines acknowledge that most developments will not result in increases in the number of movements of hazardous/dangerous loads. The publication "The Carriage of Dangerous Goods in the UK" lists materials which can represent a hazard when in transit and provides guidance in relation to the safe carriage of these goods.

Fear and Intimidation

13.46 This again relates to pedestrians, and shared characteristics with pedestrian amenity. There are now commonly agreed thresholds for estimating danger, but research work is cited setting out "degree of hazard" levels relating to 18 hour average traffic flow, 18 hour HGV flow and average vehicle speed. These levels are considered within this chapter in terms of impact.

Limitations and Assumptions

13.47 The main limitation to the baseline conditions presented within the chapter is the precision of the traffic flows since they are based on traffic count data. Such counts are recorded over a day or a week, as is accepted practice, and are subject to an accuracy of + or – 10%.

13.48 The TA methodology makes a number of assumptions related to trip generation and distribution and construction vehicle movements. In addition, a number of assumptions have been made on committed developments and traffic growth. None of these assumptions are unusual in the preparation of a TA.

Existing Baseline Conditions

Existing Highway Network

13.49 It is proposed that the Application Site will take access via a ghost island right turn junction off the B1053 Radwinter Road. Radwinter Road is a single carriageway road which routes west from Saffron Walden to Sewards End to the east of the Application Site. The agricultural access is located between a right / left hand bend on Radwinter Road approximately 210m east of the proposed Site access.

13.50 Radwinter Road to the west of the Application Site towards Saffron Walden forms part of a signalised junction with the B184 Thaxted Road / B184 East Street / Chaters Hill.

13.51 Radwinter Road in the vicinity of the Application Site is a 6m wide single carriageway road with single lanes in either direction and 60mph speed limit. Approximately 180m west of the proposed Site access is a change in speed limit to 30mph. Along the Site frontage there is a narrow unlit footway on the north side of Radwinter Road that continues into Sewards End. From the Linden Homes access, approximately 250m west of the proposed Site access, there are illuminated 2m wide footways on both sides of the carriageway that continue into Saffron Walden.

13.52 Elizabeth Way forms the northern arm of a signalised junction with Radwinter Road / Horn Book and the southern arm of a simple priority junction with Ashdon Road.

13.53 Elizabeth Way is a 6m – 7m wide single carriageway road with single lanes in either direction and a 30mph speed limit. There are illuminated 2m wide footways on both sides of the carriageway.

13.54 The B184 is formed of Thaxted Road, East Street, Hill Street, George Street, Audley Road, High Street, Bridge Street, Windmill Hill, Springwell Road and Walden Road.

13.55 Thaxted Road routes from the signalised junction with Radwinter Road / East Street / Chaters Hill south to Thaxted.

13.56 The East Street links the one-way network traffic from the High Street; with East Street/Hill Street/George Street providing for eastbound trips from the centre of the High Street; and Audley Road providing for westbound trips to the southern end of the High Street.

13.57 High Street is the main road through the town centre and is the main focus for retail and commercial activity in the town. To the north, High Street leads into Bridge Street, Windmill Hill, Springwell Road and Walden Road, ultimately linking to Junction 9a of the M11.

13.58 To the south it leads to Debden Road and London Road and ultimately to Audley End Road and Newport Road where UDC's offices are located. Saffron Walden County High School is located on Audley End Road and it is also the signed route to Audley End Railway Station. The railway station can also be reached via Newport Road which is also the signed route from Saffron Walden to Stansted Airport and Bishops Stortford.

Existing Pedestrian Infrastructure

13.59 The B1053 Radwinter Road has a circa 1m wide unilluminated footway to the north of the carriageway in the vicinity of the Application Site. Approximately 250m west of the proposed Site access (at the Linden Homes development access), there are illuminated 2m wide footways on both sides of the carriageway which continue west to the centre of Saffron Walden.

13.60 There are a number of essential services and amenities, available within 1.5km of the Application Site with further services and amenities within 3km of the Application Site, with the nearest bus stops located approximately 450m west of the proposed Site access, which are accessible by travelling on-foot.

Existing Cycle Infrastructure

13.61 There are no dedicated cycling facilities on the B1053 Radwinter Road in the vicinity of the Application Site. The B1053 Radwinter Road in the vicinity of the Application Site is restricted by a 60mph speed limit, however, approximately 180m west of the proposed Site access there is a change in speed limit to 30mph. It is, therefore, considered suitable for experienced cyclists to share the carriageway.

Public Transport Services

13.62 The nearest bus stops in relation to the development Site are the 'Tesco Store' stops located on Radwinter Road, just to the west of the Tesco access close to the Smallbridge Road junction. The stops are approximately 450m west of the proposed Site access. The westbound bus stop comprises a flag with bus timetable information and a layby with a cage. There are two bus stops for eastbound services with one located in the Tesco Store car park and the other located opposite Tesco in the form of a hail and ride bus stop.

13.63 There are several bus services which provide school services or infrequent services. The 417, 419 and 438 bus services provide AM and PM services to Saffron Walden High School and JF Academy. The 101 service provides an inbound and outbound service between Whittlesford and Tesco. The 34 service provides a loop around Saffron Walden on Tuesdays and Thursdays with five inter-peak services a day.

13.64 A summary of the frequent bus services is provided in **Table 13.5**

Table 13.5: Frequent Bus Services in the Vicinity of the Site

NO.	ROUTE	DAYS	FIRST SERVICE	FREQUENCY	LAST SERVICE
6	Tesco, Saffron Walden – Stansted Airport	Monday – Saturday	8.15am	Approximately Every Hour	7.25pm
	Stansted Airport – Tesco, Saffron Walden		7.34am		7.03pm
60	Newport – Haverhill	Monday – Friday	9.38am	Approximately Every Two Hours	6.13pm
	Audley End - Haverhill	Saturday	9.11am	Three Services (1.44pm)	5.24pm
	Haverhill – Audley End	Monday – Friday	7.54am	Approximately Every Two Hours	5.39pm
		Saturday	10.30am	Three Services (3pm)	4.50pm
301	Bishop's Stortford – B1053 inside Tesco	Monday – Saturday	7.38am	Approximately Every Hour	7.16pm
	B1053 inside Tesco – Bishop's Stortford	Monday – Saturday	7.12am	Approximately Every Hour	7.21pm

13.65 The number 6, 60 and 301 bus services, from the Tesco bus stops, provide regular bus services throughout the week and on Saturdays, around Saffron Walden, to Stansted Airport, Haverhill and Audley End. The services provide suitable opportunities for residents to access employment areas, access services and amenities, and travel for leisure. Routes 60 and 301 also serve Audley End Railway Station providing opportunities for multi modal trips by public transport. In addition, the 417, 419 and 438 services provide dedicated school bus services, providing opportunities of future residents of the Site to travel to school by bus.

13.66 It should be noted that due to the COVID-19 pandemic the bus timetables may have been affected and may have a future impact on bus service frequency in the locality.

Demand Responsive Transport (DaRT) Services

13.67 Essex Highways operate the DaRT 1 and 2 service within Saffron Walden, Uttlesford and Braintree between 6am and 8pm Monday – Saturday. The DaRT consists of a minibus vehicle with between 8 and 16 passengers, the service is fully flexible and operates by grouping services based on similar pre-booked passenger itineraries.

13.68 In addition, the F29 service forms a looped timetabled service for DaRT 1 and 2 operating from the Tesco bus stops to Linton and Hadstock on a Tuesday only. The F29 provides outbound service from Tesco bus stops at 10.50am and 1.35pm with the return services arriving at the Tesco bus stops at 11.45pm and 2.30pm.

13.69 The DaRT provides future residents with the opportunity to use a flexible bus service to access locations around Uttlesford and Braintree which are otherwise inaccessible via the scheduled bus services.

13.70 A Public Transport Strategy has been developed for the Proposed Development, details of which are set in Section 5 of the appended TA (**Appendix 13.1**). In summary, new bus stops are proposed on Radwinter Road adjacent to the Site which will provide future residents with a good level of accessibility to local bus services.

Rail Services

13.71 Audley End Railway Station is located approximately 5.4km southwest of the Application Site. The Site is accessible via the 60 and 301 bus services, with a journey time of approximately 20 minutes. The railway station is also within an acceptable cycling distance.

13.72 The Audley End Railway Station is managed by Greater Anglia and is located on the West Anglia main line. The station offers regular services to numerous destinations including Stansted Airport, Cambridge, London Liverpool Street and Norwich.

Baseline Traffic Flows

13.73 It is the accepted position of the Highway Authority that it has not been possible to collect new traffic data to support this assessment due to the ongoing effects of the Coronavirus Pandemic. It was, therefore, agreed that traffic data could be extracted from other Transport Assessments that have been prepared for the consented housing sites in Saffron Walden. Further detail on the derivation of 2023 Baseline traffic flows is provided below.

Accidents and Safety

13.74 ECC has provided Personal Injury Collison (PIC) data for the agreed study area, which includes Radwinter Road between its junction with Thaxted Road and Redgates Lane, as well as Elizabeth Way, for the most recent five-year period available (to the end of March 2021). Full details of the accidents including a location plot are provided within the TA. The junctions and links that make up the accident analysis study area are considered in more detail below.

B1053 Radwinter Road / Thaxted Road / East Street / Chaters Hill

13.75 A total of two PICs occurred at the staggered junction between the B1053 Radwinter Road / Thaxted Road / East Street / Chaters Hill, resulting in a serious injury and a slight injury.

13.76 The first collision (Ref:19863719) occurred on Tuesday 30th July 2019 at 11:40pm whilst it was raining during the hours of darkness with street lighting lit. The collision occurred when a car travelling north on Thaxted Road, approached the junction with the B1053 Radwinter Road to turn left, within the junction another car had collided with the nearside front passenger door. This resulted in the passenger of the first car sustaining slight injuries. The PIC report suggests that the driver of the second vehicle was in a hurry, careless or reckless.

13.77 The second collision (Ref:20966253) occurred on Tuesday 21st July 2020 at 6:15pm during fine weather conditions with a dry road surface. The collision occurred when a pedestrian walking east along the B1053 Radwinter Road towards Saffron Walden town centre walked into the offside of a car travelling westbound on the B1053 Radwinter Road. This resulted in the pedestrian sustaining serious injuries. The PIC report suggests that it was very likely that the pedestrian failed to look properly.

B1053 Radwinter Road / Vanoli Close

13.78 One PIC occurred at the junction between the B1053 Radwinter Road / Vanoli Close, resulting in a serious injury.

13.79 The collision (Ref:16133854) occurred on Friday 25th November 2016 at 5:15am during fine weather conditions with a dry road surface during the hours of darkness with street lighting lit. The collision occurred when a car travelling northeast on the B1053 Radwinter Road was struck on the front offside by a car attempting to turn right out of Vanoli Road to travel northeast on the B1053 Radwinter Road. This resulted in the driver of the car traveling on the B1053 Radwinter Road sustaining serious injuries. The PIC report suggests that it was very likely the driver egressing Vanoli Road failed to look properly.

B1053 Radwinter Road / Hollyhock Road

13.80 Two PICs occurred at the junction between the B1053 Radwinter Road / Hollyhock Road, resulting in a serious and a slight injury.

13.81 The first collision (Ref:19808618) occurred on Thursday 17th January 2019 at 7:15am during fine weather conditions with a wet road surface during the hours of darkness with street lighting lit. The collision occurred when a light goods vehicle travelling eastbound on the B1053 Radwinter Road, having just passed Hollyhock Road on the nearside, a 12-year-old pedestrian stepped into the vehicle colliding with its nearside wing mirror. This resulted in the pedestrian sustaining serious injuries. The PIC report suggests it was very likely the pedestrian failed to look properly.

13.82 The second collision (Ref:19833642) occurred on Tuesday 23rd April 2019 at 8:50pm during fine weather conditions with a dry road surface during the hours of darkness, it was not known whether street lighting was lit. The collision occurred when a cyclist, wearing black with a black bike, travelling along the footway to the south of the B1053 Radwinter Road entered the carriageway near the junction with Hollyhock Road and collided with a car travelling eastbound on the B1053 Radwinter Road. This resulted in the 15-year-old cyclist sustaining slight injuries. The PIC report suggests that it was very likely the cyclist failed to look properly when entering the carriageway.

B1053 Radwinter Road / Turpin Hall Farm

13.83 One PIC occurred at the junction between the B1053 Radwinter Road / Turpin Hall Farm, resulting in a serious injury.

13.84 The collision (Ref:18328090) occurred on Tuesday 18th September 2018 at 4:23pm during fine weather conditions with a dry road surface. The collision occurred when a car travelling eastbound on the B1053 Radwinter Road slowed to turn right into Turpin Hall Farm and was rear shunted by a car travelling behind. This resulted in the passenger of the car turning into Turpin Hall Farm sustaining serious injuries. The PIC report suggests that it was possibly due to the rear shunting car exceeding the speed limit and very likely they failed to look properly.

B1053 Radwinter Road / Elizabeth Way

13.85 Two collisions occurred within the vicinity of the junction between B1053 Radwinter Road / Elizabeth Way, both of which resulted in slight injuries.

13.86 The first collision occurred on Wednesday 22nd July 2020 at 1:12pm during fine weather conditions with a dry road surface. The collision occurred when a pedestrian ran into a car,

who had stopped, travelling eastbound on the B1053 Radwinter Road after the junction with Elizabeth Way. The pedestrian was running from The Spike and was detained by police officers following an incident at The Spike. This resulted in the pedestrian sustaining slight injuries. The PIC report suggests that it was very likely due to dangerous actions by the pedestrian in the carriageway.

13.87 The second collision occurred on Sunday 4th October 2020 at 8:35am whilst it was raining. The collision occurred when a lights goods vehicle was travelling west along the B1053 Radwinter Road attempted to turn right into Elizabeth Way colliding with the front of a car travelling east through the junction. This resulted in the driver of the car sustaining slight injuries. The PIC report suggests that it was very likely due to a slippery road surface and that they failed to judge the other vehicle's speed.

B1053 Radwinter Road

13.88 A total of five PIC's have occurred at various locations away from junctions on the B1053 Radwinter Road. The five PIC's have resulted in four serious injuries and four slight injuries.

13.89 The first collision (Ref:16138242) occurred on Thursday 15th December 2016 at 9:10pm during fine weather conditions with a dry road surface during the hours of darkness with street lighting lit. The collision occurred when a car travelling east on the B1053 Radwinter Road (in the vicinity of no.33 Radwinter Road, Seawards End) collided with the rear of a parked car, causing the vehicle to spin, leave the carriageway before coming to rest in a ditch. This resulted in the driver and two passengers sustaining slight injuries with another passenger sustaining serious injuries. The PIC report suggests that it was very likely the driver failed to look properly.

13.90 The second collision (Ref:18296500) occurred on Monday 28th May 2018 at 4:27pm during fine weather conditions with a dry road surface. The collision occurred when a car with trailer traveling eastbound on the B1053 Radwinter Road has attempted to travel around a right-hand bend in the road (in the vicinity of the Application Site's agricultural access) and clipped the kerb causing the driver to lose control and jack knife. The vehicle had crossed into the opposite lane, where an oncoming car has collided with trailer and tow bar. This resulted in the driver of the car sustaining serious injuries. The PIC report suggests that it was very likely down to the bend in the road.

13.91 The third collision (Ref:18307928) occurred on Thursday 5th July 2018 at 11:20am during fine weather conditions with a dry road surface. The collision occurred when a car travelling eastbound along the B1053 Radwinter Road toward Sewards End, in the vicinity of Radwinter Road, rear shunted a cyclist. This resulted in the cyclist sustaining serious injuries. The PIC report suggests that it was very likely the driver failed to look properly.

13.92 The fourth collision (Ref:19838518) occurred on Wednesday 3rd April 2019 at 6:45am during fine weather conditions with a dry road surface. The collision occurred when a cyclist travelling westbound on the B1053 Radwinter Road (in the vicinity of the cemetery) was clipped by a light goods vehicle attempting to overtake the cyclist, causing them to lose control and go over the handlebars. This resulted in the cyclist sustaining slight injuries. The PIC report suggests that it was possible the driver passed to close to the cyclist.

13.93 The final collision (Ref:19907682) occurred on Monday 9th December 2019 at 9:46pm during fine weather conditions with a frosty/icy road surface during the hours of darkness with no street lighting. The collision occurred when a car travelling westbound on the B1053 Radwinter Road

lost control on a right-hand bend in the road (to the west of the Application Site's agricultural access) and rolled the vehicle. This resulted in the driver sustaining serious injuries. The PIC report suggests that it was possibly due to the driver losing control.

Summary of Accidents

13.94 It is considered that the recorded PICs have no discernible patterns or trends and are considered to have occurred as a result of driver, pedestrian or cyclist error rather than being attributed to the geometry of the LHN. Although the PIC report did suggest that the collision (Ref:18296500) was due to the bend in the road, it is should be noted that the driver clipped the kerb which resulted in them losing control of the vehicle, this would suggest the collision occurred as a result of driver error.

Evolution of the Baseline Conditions without Development

2023 Baseline Traffic Flows

13.95 It is the accepted position of the Highway Authority that it has not been possible to collect new traffic data to support this assessment due to the ongoing effects of the Coronavirus Pandemic. It was, therefore, agreed that traffic data could be extracted from other Transport Assessments that have been prepared for the consented housing sites in Saffron Walden.

13.96 It has been agreed with the Highway Authority that the base flows for the 'With Link Road' scenario could be extracted from the Transport Addendum – Link Road Assessment (dated September 2018), that was prepared by Peter Brett Associates (PBA) for Land East of Thaxted Road – now referred to as the Bellway site.

13.97 At Appendix F of the PBA report, there are AM and PM peak traffic flow diagrams showing the 2023 Forecast Year Cumulative Link Road scenario. These include the reassignment of background traffic to the consented link road together with committed development traffic from the Bellway, Dianthus Land and Linden Homes sites.

13.98 The PBA report did not assess the Radwinter Road / Elizabeth Way traffic signal junction or junctions on Ashdon Road and, therefore, the base flows for these junctions have been extracted from the Highways Impact Assessment (dated April 2018) prepared by Iceni on behalf of Dianthus Land.

13.99 To factor the 2018 Iceni flows to a common base year of 2023, TEMPro growth rates have been used. The TEMPro rates have been adjusted using the 'Alternative Assumptions' function to remove the consented dwellings for the agreed committed development sites from the future year housing supply in the Uttlesford Authority Area and Uttlesford 002 MSOA. The consented dwellings that have been removed from the future housing supply are set out below:

- Linden Homes – 200
- Bellway – 150
- Dianthus Land – 100
- Little Walden Road – 85
- Land at Ashdon Road – 127
- **Total – 662**

13.100 The committed development to be included equates to 662 new homes and this has been accounted for in the traffic growth assumptions.

13.101 The allocation of Land at Ashdon Road is for 167 dwellings. However, it is estimated that at the time of the base traffic surveys in 2018, approximately 40 dwellings were occupied and, therefore, the occupied dwellings have not been removed from the future housing supply.

13.102 Upon completion, the three residential sites to the west of the Application Site (Linden, Bellway, Dianthus), will deliver unrestricted vehicle access via a Link Road between Radwinter Road and Thaxted Road. This means that not only does this remove extraneous development traffic from those sites on part of the road network, but the link road also enables other traffic routing between Radwinter Road and Thaxted Road to avoid that part of the network.

13.103 The link road will have a minimum carriageway width of 6.75m, 2.0m footway and 3m shared footway / cycleway. The requirement for the link road has been secured through their respective planning consents and delivery of the developments will complete the link.

13.104 **Table 13.6** shows the 2023 Baseline traffic flows for the junctions that make up the study area network.

Table 13.6: 2023 Peak Hour Traffic Flows

JUNCTION	AM PEAK (VEH/HR)	PM PEAK (VEH/HR)
Radwinter Road / Proposed Site Access	645	577
Radwinter Road / Linden Access	863	784
Radwinter Road / Elizabeth Road / Horn Brook	1488	1594
Radwinter Road / Thaxted Road / East Street / Chatters Hill	1554	1632
Thaxted Road / Consented Link Road	1131	1118
Thaxted Road / Peaslands Road	1520	1567
London Road / Borough Lane	1659	1493
London Road / Audley End Road / Newport Road	1887	1520
High Street / George Street / Abbey Lane	1336	1369
High Street/ Church Street	1307	1067
High Street / Bridge Street / Castle Street / Myddylton Place	1437	1456
Church Street / Castle Hill / Ashdon Road / Common Hill	1594	1443
Ashdon Road / Chatters Hill	979	929
Ashdon Road / Elizabeth Way	1190	1092

Junction Assessments

13.105 To assist with the assessment of the impact of the Proposed Development on driver delay on the local highway network, the current operation of the network has been analysed by modelling with the 2023 baseline traffic flows. The total delay at each junction is expressed in Vehicle Hours (vehicleHr) for roundabouts and priority junctions and Passenger Car Unit Hours (pcuHr) for traffic signal controlled junctions. This is reported in **Table 13.7.**

Table 13.7: 2023 Baseline Junction Assessment

JUNCTION	AM PEAK TOTAL DELAY	PM PEAK TOTAL DELAY
Radwinter Road / Linden Access	0.73	0.51
Radwinter Road / Elizabeth Road / Horn Brook	12.14	12.79
Radwinter Road / Thaxted Road / East Street / Chatters Hill	26.25	23
Thaxted Road / Consented Link Road	8.97	8.92
Thaxted Road / Peaslands Road	46.51	16.58
London Road / Borough Lane	23.56	7.82
London Road / Audley End Road / Newport Road	47.22	24.21
High Street / George Street / Abbey Lane	12.92	17.21
High Street/ Church Street	56.97	3.52
High Street / Bridge Street / Castle Street / Myddylton Place	0.59	0.42
Church Street / Castle Hill / Ashdon Road / Common Hill	12.07	4.59
Ashdon Road / Chatters Hill	0.58	0.91
Ashdon Road / Elizabeth Way	1.9	2.09

Future 2026 Baseline

13.106 To convert the 2023 baseline traffic flows to the future assessment year of 2026, it is necessary to apply growth factors. As set out above, to ensure a robust assessment, TEMPro growth factors have been adjusted using the 'Alternative Assumptions' function to remove the number of consented dwellings from the future year housing supply in the Uttlesford Authority Area and Uttlesford 002 MSOA. The calculated growth factors are shown in the **Table 13.8** below.

Table 13.8: Adjusted TEMPro Growth Rates

YEAR	AM PEAK	PM PEAK
2023 - 2026	1.0062	1.0067

13.107 At the request of the Highway Authority, the former Pulse Packaging site being promoted by Endurance Estates (UTT/20/2007) has also been included in the 2026 traffic flows as a committed development despite the fact that the application is still to be determined. By agreeing to include the impact from a site that is yet to be determined, together with five consented schemes as set out above, it is considered that a robust assessment of the potential cumulative impact on the local highway network has been presented. The resulting 2026 baseline traffic flows at the identified junction are detailed in **Table 13.9**.

Table 13.9: 2026 Baseline Peak Hour Traffic Flows

JUNCTION	AM PEAK (VEH/HR)	PM PEAK (VEH/HR)
Radwinter Road / Proposed Site Access	645	577
Radwinter Road / Linden Access	863	784
Radwinter Road / Elizabeth Road / Horn Brook	1488	1594
Radwinter Road / Thaxted Road / East Street / Chatters Hill	1554	1632
Thaxted Road / Consented Link Road	1131	1118
Thaxted Road / Peaslands Road	1520	1567
London Road / Borough Lane	1659	1493
London Road / Audley End Road / Newport Road	1887	1520
High Street / George Street / Abbey Lane	1336	1369
High Street/ Church Street	1307	1067
High Street / Bridge Street / Castle Street / Myddylton Place	1437	1456
Church Street / Castle Hill / Ashdon Road / Common Hill	1594	1443
Ashdon Road / Chatters Hill	979	929
Ashdon Road / Elizabeth Way	1190	1092

13.108 The operation of the network has been analysed by modelling with the 2026 baseline traffic flows. The total delay at each junction is reported in **Table 13.10**. Again, this is expressed in vehicle Hr for roundabouts and priority junctions and pcuHr for traffic signal controlled junctions.

Table 13.10: 2026 Baseline Junction Assessment

JUNCTION	AM PEAK TOTAL DELAY	PM PEAK TOTAL DELAY
Radwinter Road / Linden Access	1.02	0.7
Radwinter Road / Elizabeth Road / Horn Brook	19.03	19.2
Radwinter Road / Thaxted Road / East Street / Chatters Hill	64.04	49.5
Thaxted Road / Consented Link Road	10.15	10.45
Thaxted Road / Peaslands Road	55.27	21.49
London Road / Borough Lane	40.85	9.85
London Road / Audley End Road / Newport Road	93.93	42.87
High Street / George Street / Abbey Lane	15.69	25.04
High Street/ Church Street	125.55	6.06
High Street / Bridge Street / Castle Street / Myddylton Place	0.64	0.46

JUNCTION	AM PEAK TOTAL DELAY	PM PEAK TOTAL DELAY
Church Street / Castle Hill / Ashdon Road / Common Hill	34.74	6.42
Ashdon Road / Chatters Hill	0.62	0.98
Ashdon Road / Elizabeth Way	6.64	3.22

Prediction and Evaluation of Impacts

Incorporated (Inherent) Mitigation

13.109 The Proposed Development would be accompanied by transport mitigation measures as part of the provision of the Site access junction. These include:

- Provision of a new footway on the southern side of Radwinter Road to the east of the Site access to provide a link with the existing footway; and
- Provision of new bus stops on Radwinter Road and a financial contribution to allow ECC to operate a half hourly service to the town centre and an hourly service to Audley End Railway Station.

Construction Phase

13.110 There would be a number of components of construction traffic including:

- Construction vehicles;
- Employee movements associated with construction; and
- Vehicle movements associated with movement (import and export) of materials.

13.111 Whilst a detailed assessment of the construction phase has not been undertaken at this outline stage, it is envisaged that a temporary access to the Site, in the location of the permanent Site access junction, would initially be constructed to allow construction traffic to access the Site. At an appropriate point in the construction programme, the permanent Site access would be formed, which would then form the main construction access point.

13.112 Construction working hours are not known at this stage but it is anticipated that these would be scheduled so as to ensure that most construction employee traffic would generally arrive and depart outside of the peak hours.

13.113 Routing of construction traffic would be agreed with ECC in advance of the start of construction on site, however, at this stage, it is assumed that vehicles would travel to and from the Site via the M11. The provision of direction signage of identified construction vehicle routes would be agreed with ECC to avoid vehicles using inappropriate rotes to reach the Site. Appointed contractors would be required to adhere to any temporary routing agreements to ensure that all construction related traffic uses principal and strategic routes to access the Site as far as possible.

Construction Traffic

Driver Delay

13.114 During the peak construction phase, it is anticipated that there could be up to 30 HGV movements to the Site each day. In addition, up to a further 100 light vehicles (i.e. non-HGVs) could also seek to access the Site on a daily basis during the peak period of construction activity.

13.115 It is considered that the significance of the effect on driver delay would be a **temporary (short-term) minor adverse** effect as a result of construction activity.

Severance, Pedestrian Delay, Amenity, Accidents and Safety

13.116 It is important to note that HGV movements would be dispersed across the working day, outside of the AM and PM peak periods. The arrival and departure of light vehicles would also be scheduled to avoid peak periods where possible. In addition, traffic will be required to adhere to specific routing agreements, therefore, avoiding inappropriate routes.

13.117 It is, therefore, considered that the significance of the effect would be a **temporary (short-term) moderate adverse** effect on severance, pedestrian delay, amenity and accidents and safety as a result of construction activity.

Hazardous Loads

13.118 At this stage, it is not envisaged that construction of the Proposed Development would generate or attract any hazardous loads. On this basis, no likely significant effects are anticipated so the assessment of the proposals upon the incidence of hazardous loads would be **No Change/ None**.

Fear and Intimidation

13.119 The sensitivity of a link to fear and intimidation are primarily related to the level of pedestrian and cyclist activity along those links. On links where there are high levels of pedestrian and cycle activity, the sensitivity would be related to the volumes of HGV traffic and the level of separation between the pedestrians/cyclists and vehicular traffic.

13.120 Given HGV movements would be dispersed across the working day and on roads / junctions where footways are provided, it is considered that the significance of the effect across the study area would be **temporary (short-term) moderate adverse** on fear and intimidation as a result of construction activity.

Operational Phase

13.121 Operational development impacts are considered against the 2026 future baseline traffic flows. Detailed assessment of the Proposed Development traffic generation and distribution onto the local highway network is provided within the appended TA (**Appendix 13.1**).

13.122 The TRICS database has been used to estimate the trip generation at the Proposed Development. TRICS provides trip rate information for a range of land uses throughout the United Kingdom and in this instance sites in the houses privately owned category have been used.

13.123 Site selection has been refined to only include developments in the range 100 to 300 units with an edge of town location. Sites in Greater London, Ireland, Scotland, and Wales have been excluded. The peak hour vehicle trips generated by the Proposed Development are summarised in **Table 13.11.**

Table 13.11: Proposed Development Trip Generation

AM PEAK		PM PEAK	
Arrivals	Departures	Arrivals	Departures
35	92	83	39

13.124 This trip generation has been agreed with the Highway Authority. **Tables 13.12** and **13.13** indicate the total and proportional traffic increase at the identified junction in 2026 as a result of the Proposed Development.

Table 13.12: AM Peak Traffic Flow Analysis

JUNCTION	2026 NO DEV	2026 + DEV	DEV TRIPS	% INCREASE
Radwinter Road / Proposed Site Access	645	775	130	20.16%
Radwinter Road / Linden Access	863	985	122	14.14%
Radwinter Road / Elizabeth Road / Horn Brook	1488	1575	87	5.85%
Radwinter Road / Thaxted Road / East Street / Chatters Hill	1554	1588	34	2.19%
Thaxted Road / Consented Link Road	1131	1166	35	3.09%
Thaxted Road / Peaslands Road	1520	1548	28	1.84%
London Road / Borough Lane	1659	1701	42	2.53%
London Road / Audley End Road / Newport Road	1887	1929	42	2.23%
High Street / George Street / Abbey Lane	1336	1354	18	1.35%
High Street/ Church Street	1307	1348	41	3.14%
High Street / Bridge Street / Castle Street / Myddylton Place	1437	1482	45	3.13%
Church Street / Castle Hill / Ashdon Road / Common Hill	1594	1641	47	2.95%
Ashdon Road / Chatters Hill	979	1026	47	4.80%
Ashdon Road / Elizabeth Way	1190	1244	54	4.54%

Table 13.13 PM Peak Traffic Flow Analysis

JUNCTION	2026 NO DEV	2026 + DEV	DEV TRIPS	% INCREASE
Radwinter Road / Proposed Site Access	577	702	125	21.66%
Radwinter Road / Linden Access	784	901	117	14.92%
Radwinter Road / Elizabeth Road / Horn Brook	1594	1681	87	5.46%

JUNCTION	2026 NO DEV	2026 + DEV	DEV TRIPS	% INCREASE
Radwinter Road / Thaxted Road / East Street / Chatters Hill	1632	1674	42	2.57%
Thaxted Road / Consented Link Road	1118	1151	33	2.95%
Thaxted Road / Peaslands Road	1567	1595	28	1.79%
London Road / Borough Lane	1493	1534	41	2.75%
London Road / Audley End Road / Newport Road	1520	1561	41	2.70%
High Street / George Street / Abbey Lane	1369	1404	35	2.56%
High Street/ Church Street	1067	1096	29	2.72%
High Street / Bridge Street / Castle Street / Myddylton Place	1456	1501	45	3.09%
Church Street / Castle Hill / Ashdon Road / Common Hill	1443	1480	37	2.56%
Ashdon Road / Chatters Hill	929	966	37	3.98%
Ashdon Road / Elizabeth Way	1092	1136	44	4.03%

Severance

13.125 With reference to the IEMA guidelines, there are no junctions where increases in peak hour flows would be greater than 30% and only two junctions where an increase in peak hour traffic flows of over 10% is predicted. At these locations, the junctions of Radwinter Road with the Site access and Linden Homes site access, the level of receptor sensitivity is considered to be low and the magnitude of change is negligible.

13.126 At all other locations, the increase in peak hour traffic flows is predicted to be below 10%, with the majority of junctions below 5% and, therefore, again the impact in terms of severance can be considered **negligible**.

Driver Delay

13.127 **Tables 13.14** and **13.15** below indicate the change in total junction delay at each junction within the study area. Again, this is expressed in vehicleHr for roundabouts and priority junctions and pcuHr for traffic signal controlled junctions.

Table 13.14: AM Peak Hour Driver Delay with and without Proposed Development

JUNCTION	2026 NO DEV	2026 + DEV
Radwinter Road / Linden Access	1.02	1.15
Radwinter Road / Elizabeth Road / Horn Brook	19.03	23.89
Radwinter Road / Thaxted Road / East Street / Chatters Hill	64.04	105.79
Thaxted Road / Consented Link Road	10.15	10.91
Thaxted Road / Peaslands Road	55.27	67.55

JUNCTION	2026 NO DEV	2026 + DEV
London Road / Borough Lane	40.85	53
London Road / Audley End Road / Newport Road	93.93	95.82
High Street / George Street / Abbey Lane	15.69	16.4
High Street/ Church Street	125.55	185.24
High Street / Bridge Street / Castle Street / Myddylton Place	0.64	0.71
Church Street / Castle Hill / Ashdon Road / Common Hill	34.74	49.78
Ashdon Road / Chatters Hill	0.62	0.64
Ashdon Road / Elizabeth Way	6.64	11.51

Table 13.15: PM Peak Hour Driver Delay with and without Proposed Development

JUNCTION	2026 NO DEV	2026 + DEV
Radwinter Road / Linden Access	0.7	0.85
Radwinter Road / Elizabeth Road / Horn Brook	19.2	24.99
Radwinter Road / Thaxted Road / East Street / Chatters Hill	49.5	56.57
Thaxted Road / Consented Link Road	10.45	11.35
Thaxted Road / Peaslands Road	21.49	25.21
London Road / Borough Lane	9.85	11.03
London Road / Audley End Road / Newport Road	42.87	52.65
High Street / George Street / Abbey Lane	25.04	32.48
High Street/ Church Street	6.06	8
High Street / Bridge Street / Castle Street / Myddylton Place	0.46	0.52
Church Street / Castle Hill / Ashdon Road / Common Hill	6.42	7.1
Ashdon Road / Chatters Hill	0.98	1
Ashdon Road / Elizabeth Way	3.22	3.8

13.128 It can be seen from the tables above that the impact of the Proposed Development on delay varies between junctions and ranges from an additional delay of 0.02 vehHr / pcuHr to an additional 60 vehHr / pcuHr at the High Street / Church Street junction.

13.129 There are a number of junctions within the study area that are predicted to operate at or near capacity during morning and / or evening peak periods and traffic associated with the development will result in an increase in traffic at these junctions. Due to this existing peak

period congestion, these increases in traffic would, in the absence of any mitigation, result in a worsening of this congestion such that the impact on driver delay could be classified as **minor/ moderate adverse.**

Pedestrian Delay and Amenity

13.130 Given the nature of the study area network within the town centre, there are a number of locations where pedestrians would cross. Some of these locations have controlled pedestrian crossing facilities to assist these movements, whilst at other locations, uncontrolled crossing facilities are provided.

13.131 The IEMA guidelines suggest that the impact on pedestrian delay is a judgement based on traffic flows on road links exceeding 1,400 vehicles per hour in the context of individual characteristics. Within the study area, there are eight junctions where the total peak hour traffic flow is predicted to exceed 1,400 vehicles per hour, however, it is important to note that the IEMA guidelines are based on individual links whereas the flows presented are the total for all links at the junction. There are no links within the study area where peak hour traffic flows would meet the criteria of exceeding 1,400 vehicles per hour.

13.132 This combined with the increase in traffic flows as a result of the Proposed Development being below 30% at all but two junctions and below 10% at all other junctions, the significance of this impact can be classified as **minor adverse**.

13.133 Pedestrian Amenity is defined as the relative pleasantness of a journey and is affected by traffic flow, traffic composition and pavement width and separation. The IEMA Guidelines cite a doubling of traffic flow (or its lorry component) as representing a threshold for impact evaluation. There are no junctions within the study area that will experience a doubling or halving of traffic flow as a result of the Proposed Development. In addition, the development will result in the provision of a new footway link on the southern side of Radwinter Road and uncontrolled crossing points across Radwinter Road which will result in an improved pedestrian network.

13.134 Therefore, the magnitude of the Proposed Development's impact on pedestrian amenity is considered to be **negligible**.

Accidents and Safety

13.135 An assessment of accident data has been undertaken for the purpose of this ES. The data across the study network shows that the level of reported accidents is not uncommon for this type of location. The causative factors identify that the majority of the accidents were the results of human error. As a result, there is no evidence to suggest that there is an existing road safety problem in the vicinity of the Site.

13.136 The forecast increases in traffic flow as a result of the development may lead to some increase in accidents, although as the causation factors identified in existing accidents are not related to traffic flow, there is not a direct relationship between increased flows and increased number of accidents. Therefore, it is concluded that the overall significance of impact on accidents and safety will be **minor adverse**.

Hazardous Loads

13.137 The Proposed Development is not expected to generate or attract hazardous loads during the operational phase and on this basis, no likely significant effects are anticipated so the assessment of hazardous loads would be **No Change/None**.

Fear and Intimidation

13.138 The sensitivity of a link to fear and intimidation are primarily related to the level of pedestrian and cyclist activity along those links. On links where there are high levels of pedestrian and cycle activity, the sensitivity would be related to the volumes of HGV traffic and the level of separation between the pedestrians/cyclists and vehicular traffic.

13.139 Given the operational phase of the Proposed Development would result in very few HGV movements, the impact on fear and intimidation is considered to be **negligible**.

Mitigation

13.140 The following section outlines mitigation measures that are to be built into the approach to construction and operation that will reduce identified potential effects and provide appropriate environmental protection.

Construction Phase

13.141 The construction phase will be carried out in accordance with a CEMP to be developed by the Principal Contractor to include those measures within this section. In relation to Traffic and Transport the key element of mitigation will be the adoption and operation of a Construction Traffic Management Plan (CTMP).

13.142 The CTMP will include a palette of measures that could be used to mitigate the impacts of construction vehicle movements including vehicle routing, restricted working hours, consolidation of deliveries and avoiding deliveries during network peak hours and, if possible, the requirement for contractors to hold accreditation to the Fleet Operation Recognition Scheme (FORS) and Construction Logistics, Cycle Safety and Work Related Road Risk Scheme (CLOCS), or similar.

13.143 The CEMP and CTMP can both be secured and controlled via a suitably worded planning condition. These are tried and tested measures, therefore, resulting in a high degree of certainty over their effectiveness in reducing identified impacts at the construction stage.

Operational Phase

13.144 In addition to the Incorporated ('inherent') Mitigation measures, the following measures will also be adopted at the Proposed Development to mitigate the impact of the proposals. These are set out in detail in the TA (**Appendix 13.1**).

- Improvements at the Radwinter Road / Thaxted Road / East Street / Chaters Hill junction to provide a short right turn lane on Radwinter Road;
- Upgrading of the existing mini-roundabout at the junction of Thaxted Road / Peaslands Road to provide a traffic signal controlled junction;
- Upgrading of the existing priority controlled junction of High Street / Church Street to provide a traffic signal controlled junction; and
- Travel Plan.

13.145 All of the above can be secured and controlled via a combination of planning conditions, S106/ S278 legal agreements.

Residual Effects

Construction

13.146 Following the implementation of the CEMP, including restrictions on vehicle routing and working times, it is considered that these management strategies will minimise the potential effects associated with construction activity.

13.147 Therefore, for severance, pedestrian delay, amenity, accidents and safety and fear and intimidation, it is considered that there would be a temporary (short-term) minor adverse impact as a result of the CEMP within the vicinity of the Site associated with ongoing construction activity. For driver delay, it is considered that there will continue to be a **temporary (short-term) minor adverse** impact.

Operational Phase

13.148 When taking account of these mitigation measures, the residual impact on severance and pedestrian amenity will continue to be **negligible** and on pedestrian delay and accidents will be improved but will continue to be **minor adverse**.

13.149 The traffic associated with the operation of the Proposed Development will result in increased traffic flows on the majority of the roads in the vicinity of the Site. Highway works have been identified at three junctions that will provide some additional capacity. Construction of these works is likely to lead to some short-term reductions in traffic capacity and, therefore, increased driver delay, however, once these works are completed, their benefits will be realised. The impact on total junction delay per vehicle (in vehHr / pcuHr) at the three junctions as a result of the proposed mitigation measures are presented in **Tables 13.16** and **13.17** below.

Table 13.16: AM Peak Hour Driver Delay with Mitigation

JUNCTION	2026 BASELINE	2026 + DEV WITHOUT MITIGATION	2026 + DEV WITH MITIGATION
Radwinter Road / Thaxted Road / East Street / Chatters Hill	64.04	105.79	62.96
Thaxted Road / Peaslands Road	55.27	67.55	20.79
High Street / Church Street	125.55	185.24	13.76

Table 13.17: PM Peak Hour Driver Delay with Mitigation

JUNCTION	2026 BASELINE	2026 + DEV WITHOUT MITIGATION	2026 + DEV WITH MITIGATION
Radwinter Road / Thaxted Road / East Street / Chatters Hill	49.5	56.57	44.06
Thaxted Road / Peaslands Road	21.49	25.21	18.91
High Street / Church Street	6.06	8.00	8.66

13.150 As such, following completion of the Proposed Development, with mitigation measures in place, overall, there would be some increased inconvenience to car drivers resulting in the impact on driver delay being classified as **minor adverse**.

Cumulative Effects

13.151 This section considers the effects of the Proposed Development together with the committed schemes outlined above. With regard to traffic flows, the assessment presented above includes traffic generated by these committed schemes, which are assumed to form part of the future baseline traffic flows for assessment purposes. As such, the effects of the development when considering committed developments has already be considered, and forms an integral part of the assessment findings presented earlier in this chapter.

Summary of Impacts

13.152 The potential transport effects have been assessed using established methodologies set out in the IEMA Guidelines.

13.153 **Table 13.18** contains a summary of the likely significant effects of the Proposed Development upon transport

Table 13.18: Summary of Impacts: Transport

DESCRIPTION OF IMPACT	IMPACT BEFORE MITIGATION				MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
	ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Construction Phase									
Severance	Adv	Rev	ST	Mod	CEMP.	Adv	Rev	ST	Min
Driver Delay	Adv	Rev	ST	Min		Adv	Rev	ST	Min
Pedestrian delay and amenity	Adv	Rev	ST	Mod		Adv	Rev	ST	Min
Accidents and safety	Adv	Rev	ST	Mod		Adv	Rev	ST	Min
Hazardous loads	No change					No Change			
Fear and intimidation	Adv	Rev	ST	Mod		Adv	Rev	ST	Min
Operational Development									
Severance	Adv	Irrev	LT	Neg	Highway Improvements at three junctions. New footway link on Radwinter Road. Provision of new bus stops and financial contribution to bus service provision.snip Travel Plan.	Adv	Irrev	LT	Neg
Driver Delay	Adv	Irrev	LT	Mod		Adv	Irrev	LT	Min
Pedestrian delay and amenity	Adv	Irrev	LT	Min		Adv	Irrev	LT	Min
Accidents and safety	Adv	Irrev	LT	Min		Adv	Irrev	LT	Min
Hazardous loads	No change					No Change			
Fear and intimidation	Adv	Irrev	LT	Min		Adv	Irrev	LT	Min

Key:

Mod: Moderate Min: Minor Rev: Reversible LT: Long Term Adv: Adverse

Neg: Negligible Ben: Beneficial Irrev: Irreversible ST: Short Term

Cumulative Effects

14

14.0 Cumulative Effects

Introduction

14.1 This chapter describes the scope of the cumulative effects in the locality of the Site as considered by this assessment. Each technical chapter of this ES (chapters 6 to 13) includes a detailed assessment of the likely cumulative environmental effects, therefore, this chapter provides a summary of the cumulative assessment conclusions for each of the ES technical topics.

Methodology

14.2 There is no accepted methodology for cumulative assessment, although guidance is available in the form of EC (May 1999) Guidelines for the Assessment of Indirect and Cumulative Impacts.

14.3 There are two main forms of cumulative effect:

- Inter-project effects: The combined effect of the Proposed Development together with other reasonably foreseeable or committed developments (taking into consideration effects at both the construction and operational phases); and
- Intra-project effects: The combined effects caused by the combination of a number of impacts on a particular receptor (taking into consideration impacts at both the construction and operational phases), which may collectively cause a more significant effect than individually. For example, the combination of noise and air quality impacts.

Inter-Project Effects

14.4 Inter-project cumulative effects relate to multiple proposed developments giving rise to significant effects at a receptor. For example, a number of developments in close proximity to one another may, for example, give rise to significant landscape and traffic effects cumulatively.

14.5 There is no guidance which defines the appropriate study area for considering cumulative effects of identified consented and pending developments. A set of screening criteria has, therefore, been developed to identify which cumulative schemes should be subject to assessment in combination with the Proposed Development.

14.6 Projects were considered for cumulative effects where they meet the following criteria:

- Development which is within a zone of influence of the Proposed Development. This zone has been set at 2 km;
- Planning applications during the last two years;
- Development which is expected to be constructed at the same time as the Proposed Development.
- EIA development (which has the potential to have likely significant effects in its own right);
- Development which introduces sensitive receptors in close proximity to the Site (acknowledging that the agent of change principle means the introducer of any sensitive receptors is responsible for assessing impacts on those receptors); and
- Major Development.

14.7 Major Development is classified as development involving one or more of the following:

- The winning or working of minerals or the use of land for mineral-working deposits;
- Waste development;
- The provision of dwelling houses where the number of dwelling houses to be provided is 10 or more;
- The development is to be carried out on-site having an area of 0.5 hectares or more; and
- The provision of a building or buildings where the floor space to be created is 1,000 square metres or more.

Intra-Project Effects

14.8 There is no established EIA methodology for assessing and quantifying the combined effects of individual effects on sensitive receptors. It should, however, be noted that cumulative effects can generally only be broadly identified and assessed qualitatively and where possible, quantified. The assessment has been undertaken in accordance with the following stages:

- Identification of sensitive receptors;
- A review of the residual effects reported in Chapters 6 to 13 to identify the potential for effect interactions and, therefore, combined cumulative effects; and
- Identification of appropriate mitigation of the identified effects, as required.

14.9 The criteria for identifying those receptors that are considered to be potentially sensitive include the nature of the receptor, proximity to the works, and extent of exposure to impacts. It should also be noted that different stages of construction works will result in different effect magnitudes. It may be that for some environmental topics, there are no interactions with other individual effects and, therefore, there are no combined cumulative effects.

Results

Inter-Project Effects

14.10 Based on criteria set out earlier in this chapter and following a planning search across the UDC local authority area, the following projects were identified and are listed in **Table 14.1.**

Table 14.1: Development Commitments

PROJECT	PLANNING REFERENCE	KEY ELEMENTS OF PROPOSAL	REASONS FOR INCLUSION/ EXCLUSION BASED ON CRITERIA PROVIDED ABOVE
Land South of Radwinter Road	UTT/13/3467/OP UTT/16/1856/DFO	Up to 230 dwellings including link road and access to and preparation of land for one form entry primary school.	A Reserved Matters Application (RMA) for 200 dwellings was approved in January 2017. This project is directly adjacent to the Proposed Development and is currently under construction. Due to the proximity of the project to the Proposed Development, there may be cumulative impacts, therefore, this project has been included in the cumulative assessment.

PROJECT	PLANNING REFERENCE	KEY ELEMENTS OF PROPOSAL	REASONS FOR INCLUSION/ EXCLUSION BASED ON CRITERIA PROVIDED ABOVE
Land South of Radwinter Road (former Printpack Site)	UTT/20/2007/FUL	Demolition of existing buildings and erection of a discount food store, a 70-bed care home and 49 no. retirement living apartments with access, car parking, landscaping and associated works.	This project was submitted in August 2020 but has not yet been approved. The project is approximately 560m west of the Proposed Development. If this project is approved, there may be some overlap in timings of construction, therefore, this project has been included in the cumulative assessment.
Land North of Shire Hill Farm	UTT/17/2832/OP	Up to 100 dwellings.	This project was approved in July 2020 and is directly south west of the Proposed Development. There may be some overlap in the timing of construction works with this project and the Proposed Development, therefore, this project has been included in the cumulative assessment.
Land East of Thaxted Road	UTT/18/0824/OP UTT/19/2355/DFO	Up to 150 dwellings.	The RMA (19/2355/DFO) for this project was allowed on appeal on 29 January 2020. The project is approximately 590m south west of the Proposed Development. There may be some overlap in the timing of construction works with this project and the Proposed Development, therefore, this project has been included in the cumulative assessment.
Land at Ashdon Road	UTT/13/2423/OP	Redevelopment of the site for up to 167 residential units.	Although this project was consented on 26 November 2014, this scheme is only partially built out and ECC requested that the level of occupation in 2018 when the base traffic counts were undertaken is established. This project has, therefore, been included in the cumulative assessment.
Land East of Little Walden Road	UTT/16/2210/OP	Up to 85 residential dwellings.	This project was granted permission at appeal and is located approximately 1.9km north west of the Proposed Development. This project has been included in the cumulative assessment at the request of ECC.

14.11 Therefore, a total of six developments have been considered in the assessment of cumulative effects:

- Land South of Radwinter Road UTT/16/1856/DFO;
- Land South of Radwinter Road UTT/20/2007/FUL;
- Land North of Shire Hill Farm (UTT/17/2832/OP);
- Land East of Thaxted Road (UTT/18/0824/OP &19/2355/DFO);
- Land at Ashdon Road UTT/13/2423/OP; and
- Land East of Little Walden Road (UTT/16/2210/OP).

14.12 The projects mentioned above have been used to inform the cumulative assessment of each topic. The summaries of the cumulative assessment for each topic are detailed below.

Predicted Cumulative Effects – Inter-Project Effects

Agriculture

14.13 There are no assessed aspects of the Proposed Development which could result in cumulative effects on soils and agricultural land quality. There are no other projects which could result in cumulative effects upon this environmental aspect.

Air Quality

Construction Phase

14.14 Potential cumulative construction effects could occur should construction of other consented development occur at the same time as the Proposed Development and where receptors are within sufficient distance of each site to experience effects from both. The IAQM guidance indicates that significant effects can occur up to 350m from construction activities, therefore, cumulative effects would only occur where there are other construction sites within 700m of the Proposed Development with receptors in between.

14.15 The following schemes are within 700m of the Proposed Development and could be under construction at the same time:

- UTT/13/3467/OP and UTT/16/1856/DFO - Land South of Radwinter Road;
- UTT17/2832/OP - Land North of Shire Hill Farm; and
- UTT/18/0824/OP and UTT/19/2355/DFO - Land East of Thaxted Road.

14.16 Significant cumulative effects are unlikely to occur as each development is anticipated to employ appropriate dust mitigation techniques such that the individual construction phase effect should be ‘not significant’, either alone or cumulatively. Furthermore, it is unlikely that construction traffic from the other committed developments would use the same construction traffic routes as specified for the Proposed Development. Therefore, cumulatively, the trip generation is unlikely to exceed the EPUK and IAQM assessment criteria and impacts are unlikely to be significant.

Operational Phase

14.17 The future baseline traffic flows include the committed trip generation associated with the following schemes:

- UTT/13/3467/OP;
- UTT/16/1856/DFO;

- UTT/17/2832/OP; and
- UTT/18/0824/OP.

14.18 The modelling assessment has therefore taken account of traffic generated by approved developments in the vicinity of the Site. Concentrations of all three pollutants (NO_2, PM_{10}, $PM_{2.5}$) would remain below the relevant air quality objectives with both the approved developments and Proposed Development in operation, therefore, the assessment of cumulative effects is inherent to the assessment provided and cumulative impacts are considered to be negligible in terms of local air quality and, therefore, not significant.

Ecology

14.19 Cumulative impacts have been considered within the assessment of effects taking into consideration the potential cumulative impacts with schemes identified earlier in this chapter.

14.20 The Proposed Development has been designed to mitigate ecological impacts within the Site boundary and provide ecological enhancement including enhancing the habitat connectivity and quality with the adjacent landscape.

Flood Risk and Drainage

14.21 All surrounding developments are subject to the same guidance and legislation concerning flood risk. Therefore, all sites should provide appropriate built-in by design mitigation measures to ensure flood risk is not increased elsewhere; including surface water drainage attenuation volumes, water quality treatment and run-off rates that do not pose a flood risk to the Proposed Development Site or third party land. On this basis, there are not considered to be any adverse cumulative effects with regards to the Proposed Development in terms of flood risk or drainage.

Landscape and Visual

14.22 The following Proposed Developments were identified during the Scoping Stage for assessment of cumulative effects. Those highlighted in bold are now largely constructed and at least partially inhabited.

- **Land South of Radwinter Road UTT/16/1856/DFO and UTT/20/2007/FUL**;
- Land North of Shire Hill Farm (UTT/17/2832/OP);
- Land East of Thaxted Road (UTT/18/0824/OP &19/2355/DFO);
- **Land at Ashdon Road UTT/13/2423/OP**; and
- Land East of Little Walden Road (UTT/16/2210/OP).

14.23 All of the above schemes have been granted planning permission and UTT/16/1856/DFO / UTT/20/2007/FUL and UTT/13/2423/OP are now largely completed and a feature of the local landscape character and visual context. These are, therefore, a current feature of the existing baseline and have been assessed as such.

14.24 In respect of landscape effects, having considered the remaining planning applications, it is not judged that they will result in any difference in the assessment in the context of this cumulative baseline scenario. The erosion of rural character and encroachment of built form to the east of Saffron Walden, has already been noted in the existing baseline. Applications UTT/18/0824/OP and UTT/17/2832/OP, both also east of Saffron Walden, may lead to a further erosion of the rural landscape character, but these applications are located outside of the area considered as the local landscape character and would not change the baseline local landscape character relevant to the Site.

14.25 With regard to visual effects, the cumulative baseline similarly has no change to the visual effects identified, with the exception of Group 2 (Viewpoint 3, **Appendix 10.3**). Receptors within Group 2 have the potential to experience distant views of built form associated with application UTT/17/2832/OP. However, these views will be experienced at a distance of around a kilometre, against a backdrop of existing adjacent development within Saffron Walden. At this distance, it is considered this change would have negligible impact on the view. As a result, the visual effects on this receptor would be negligible in a cumulative baseline scenario.

Noise and Vibration

14.26 The schemes identified are residential, or predominantly residential developments. Therefore, the key cumulative effects are likely to be related to off-site road traffic noise levels, and it is understood that traffic from the schemes has already been included in the supplied traffic data. For this reason, the consideration of cumulative effects is already embedded within the assessment undertaken, representing a worse case scenario, resulting in a robust assessment.

Socio-Economics

14.27 As detailed in Chapter 12, six consented and planned developments in a 2km radius of the Proposed Development have been considered in relation to possible cumulative effects. This includes 5 residential developments, providing approximately 732 residential units and a 70 bed care home and 49 retirement apartments.

14.28 The consented and planned residential developments would provide considerable benefit in terms of meeting the housing needs in the district and providing temporary employment during the construction phases. The 70 bed care home would also provide for some employment during the operational phase. Nevertheless, the combined developments would also result in additional pressure on existing public infrastructure such as educational and health facilities.

14.29 The cumulative developments combined with the Proposed Development would result in an increase in approximately 2,426 residents and approximately 276 primary school children and 183 secondary school children. Two of the cumulative developments (UTT/16/1856/DFO and 17/2832/OP) include the provision of land for a primary school, while the other cumulative developments include for financial contributions towards education provision. The majority of the cumulative developments also include for financial contributions towards healthcare.

14.30 With the inclusion of land for primary school provision and financial contributions towards education and healthcare, no significant cumulative effects are predicted.

Transport

14.31 With regards to traffic flows, the assessment presented in Chapter 13 includes traffic generated by these committed schemes, which are assumed to form part of the future baseline traffic flows for assessment purposes. As such, the effects of the development when considering committed developments has already be considered, and forms an integral part of the assessment findings, making for a robust assessment process.

Predicted Cumulative Effects – Intra Project Effects

14.32 The receptors considered to be the most sensitive to the cumulative impacts are nearby residents including those at Turnip Hall Farm, Pearson Road, Sativus Close, Fairfax Drive, 1 Radwinter Road and The Vineyard.

14.33 A summary of the residual effects for each chapter is provided below:

Agriculture

14.34 Following the implementation of mitigation, there will be **minor adverse** residual effects on agricultural land resources and **negligible** residual effects on soil resources.

Air Quality

Construction Phase

14.35 Following implementation of the measures that will be incorporated into the site-specific CEMP, the residual effects will be **negligible** and, therefore, not significant.

Operational Phase

14.36 Following incorporation of the mitigation measures within the scheme design, residual effects will remain **negligible** and not significant.

Ecology

14.37 Assuming the embedded mitigation and mitigation measures are implemented, the Proposed Development will result in the following residual effects which are not considered to be significant under the EIA Regulations:

- A **minor positive (beneficial)** permanent effect on habitat biodiversity, hedgerow length and biodiversity and enhancement of standing water habitat;
- Potential for short-term **minor negative (adverse)** temporary impact to reptiles during construction, if present at the time of construction.
- Potential for a long-term **minor positive (beneficial)** permanent enhancement of reptile habitat on Site (if present);
- A **negative (adverse)**, permanent impact on farmland birds using arable crop habitats e.g. skylark;
- A **positive (beneficial),** long-term permanent impact on generalist birds through increased provision of nesting and foraging habitat and increasing diversity of habitats through attenuation basins;
- Potential for short-term **minor negative (adverse)** temporary impact to hazel dormice during construction (if present);
- Potential for a long-term **minor positive (beneficial)** permanent enhancement of hazel dormice habitat (if present);
- A **negative (adverse)** impact on a low status bat roost within tree (T5);
- A small, **positive (beneficial)**, long-term impact on common bat species through increase provision of roost sites and enhancing foraging/commuting habitat;
- A **neutral (negligible)** impact on otter and water vole if found during construction;
- A small, **positive (beneficial)**, long-term impact on otters and water voles through increased foraging habitat available;
- A **positive (beneficial)** permanent impact on hedgehogs;
- Potential for permanent **negative (adverse)** impact to brown hare, if present at the time of works; and
- A **positive (beneficial)** permanent impact on terrestrial invertebrate assemblages.

Flood Risk and Drainage

14.38 With the identified mitigation including the sustainable drainage system, as outlined in the Drainage Strategy, the residual effects are deemed to be **negligible** with the exception of surface water quality which will have a **minor beneficial** residual effect.

Landscape and Visual

14.39 Following the implementation of the mitigation measures outlined in Chapter 10, visual receptors in Group 5 (users of Harcamlow Way), will experience **moderate adverse** (not significant) effects at the residual stage (15 years post completion). Residual effects on other visual receptors ranged from **minor adverse** to **negligible**.

14.40 With regards to landscape, the assessment of residual effects concludeed that the Proposed Development will result in a **minor neutral** effect on landscape features and overall landscape pattern of the Site. The residual effect on the local landscape character was considered to be **minor adverse** and that the residual effect on the settlement identity of Sewards End was **minor/negligible adverse.**.

Noise and Vibration

14.41 Following the implementation of a CEMP, there will be **minor adverse** construction noise effects at Pearson Road, Sativus Close, Fairfax Drive, **major adverse** effects at Turnip Hall Farm and **negligible** effects at 1 Radwinter Road. However, when considering the average distance from receptors, construction noise was considered to be **negligible.** Noise, as a result of construction traffic was considered to be **negligible.**

14.42 In addition, considering the average distance from receptors, construction vibration was considered to be **negligible.**

14.43 Noise, as a result of operational traffic movements ranged from **negligible to minor adverse.**

Socio-Economics

14.44 The Socio-Economic Assessment concluded there will be **minor beneficial** residual effects as a result of construction employment, housing provision, increase in economic growth, open space provision and crime reduction and safety. There will be **minor adverse** residual effects as a result of demand in education, population increase and demand on healthcare services.

Transport

14.45 Following the implementation of a CEMP, construction residual effects will be **minor adverse.** Once operational, all residual effects were also considered to be **minor adverse** with the exception of severance which was considered to be **negligible.**

Cumulative Construction Effects

14.46 Construction will take place entirely within the Site. Due to the proximity of nearby residents and there will be some construction impacts, most notably being noise, dust and transport.

14.47 The Air Quality and Transport Assessments concluded that residual air quality and transport effects at the construction phase would not be significant.

14.48 The Noise Assessment concluded that there would be major adverse construction noise effects at Turnip Hall Farm which is considered to be significant. However, the Noise Assessment concluded that when construction works are undertaken at an average distance from off-site receptors, which should be the case for the majority of the time, no significant adverse effects

are predicted. The distances from receptors at which construction noise levels would result in no residual significant adverse effects are 110m for 'Site preparation works', 100m for 'Foundations and Landscaping works', 130m for 'Building erection works', and 55m for 'Hardstanding/road construction works'.

14.49 Based on the considerations above, significant cumulative construction effects on sensitive receptors are not considered likely.

Cumulative Operational Effects

14.50 The receptors considered to be most sensitive to the cumulative impacts identified are nearby residents including at Turnip Hall Farm, Pearson Road, Sativus Close, Fairfax Drive, 1 Radwinter Road and The Vineyard. With the implementation of the mitigation measures proposed, these are not expected to be significant singularly, and consequently not expected to be significant cumulatively.

Conclusions

14.51 The combined effects of the different types of residual impacts from the Proposed Development have been considered, and it is concluded that there are no significant cumulative effects that are attributable to the development. This has included a consideration of the cumulative health effects on the relevant health receptors.

14.52 In summary, when taking into account the impacts of the Proposed Development in combination with all the other schemes, it is not considered that the cumulation of projects will significantly alter the assessment of the Proposed Development or its conclusions, or result in substantially greater impacts.

14.53 Where appropriate, the cumulative effects have been taken into account in individual assessments with both committed and reasonably foreseeable schemes either factored into the baseline modelling or accounted for as part of the assessment of overall impact (where appropriate). In this sense, the assessment of the likely significant cumulative effects of the Proposed Development constitutes a robust, worse case precautionary approach to the assessment.

14.54 The next chapter concludes the outcomes of the EIA process as reported within the ES.

15 Conclusions

15.0 Conclusions

Introduction

15.1 The planning application prepared to which this ES relates, seeks planning permission for the following Proposed Development on Land South of Radwinter Road (East of Griffin Place), Saffron Walden:

Outline planning application for the erection of up to 233 residential dwellings including affordable housing, with public open space, landscaping and sustainable drainage system (SuDS) with vehicular access point from Radwinter Road. All matters reserved except for means of access.

15.2 The EIA has assessed the likely significant environmental effects which are to arise from the Proposed Development, based upon the parameter plans and project information provided and detailed earlier in this ES.

15.3 The EIA Regulations consider that this scale of development constitutes a 'Schedule 2 Development' and, therefore, should at least be 'screened' for whether this project constitutes EIA development or not. In this instance, the Applicant has volunteered an EIA, to ensure a thorough assessment of the environmental effects of the project have been undertaken prior to, and to inform the Masterplan proposals, of the planning application.

15.4 In order to determine the scope of the EIA, a formal scoping request was submitted to UDC in March 2021, however, at the time of writing this ES, UDC have not responded to this request, notwithstanding the five-week period as prescribed by the EIA Regulations have since passed, without an agreed extension of time. On this basis, the scope of the EIA was based as submitted, whilst also taking into account those statutory consultee responses which have been received in response to the scoping request. This determined that the following environmental topics should be included within the ES:

- Agriculture;
- Air Quality;
- Ecology;
- Flood Risk and Drainage;
- Landscape and Visual;
- Noise;
- Socio-Economics and Health; and
- Transport.

15.5 Each chapter sets out the baseline information for the environmental topic, assesses the potential impacts, recommends mitigation measures (if required) and makes a judgement on the significance of the impact, both at the construction phase and the operational phase of the Proposed Development. Each chapter concludes by summarising the results of the assessment in a summary of impacts table. The concluding remarks of each assessment chapter are as detailed below:

Agriculture

15.6 The Site comprises principally of two agricultural fields which includes 3.8ha of grade 2 quality agricultural land and 13.1ha of subgrade 3a land.

15.7 There are two main soil types which are present on the Site. These are:

- Calcareous clays and heavy clay loams over chalk with permeable subsoil of variable depth; and
- Deep clays in the south and east comprising calcareous clay topsoil over slowly permeable clay subsoil.

15.8 With regards to the loss of agricultural land as a result of the Proposed Development, this was considered to be a minor adverse effect. As there is no mitigation possible for the loss of this land to built development, the residual effect of this loss of land remains at minor adverse.

15.9 Mitigation for potential loss or damage to soil resources is available in the form of a site specific Soil Management Plan (in accordance with the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites). This should include:

- Depth and method of topsoil stripping and stockpiling;
- Identification of landscaping topsoil requirements and assessment of suitability and availability of on-site resources; and
- Means of subsoil protection from compaction damage (specific pathways and restricted areas for construction traffic) and remedial measures (such as ripping/subsoiling) to remove damage.

15.10 With this in place, potential residual effects on soil resources was considered to be negligible.

Air Quality

15.11 The air quality impacts associated with the Proposed Development has been assessed in Chapter 7.

15.12 The Site itself is not located within an AQMA but is located 800m to the east of an AQMA within Saffron Walden which is centred on Elm Grove.

15.13 On the basis that there will be a site-specific CEMP which will incorporate measures to reduce dust and traffic emissions, emissions as a result of construction activities will be adequately mitigated and impacts were considered to be negligible and not significant.

15.14 The ADMS dispersion model has been used to predict the impact of the operational development on local NO_2, PM_{10} and $PM_{2.5}$ concentrations. The assessment has used conservative assumptions to predict impacts. The assessment has predicted a negligible impact on concentrations of all three pollutants as a result of operational traffic. The impact of the proposals on existing receptors would, therefore, not be significant.

15.15 The assessment has predicted NO_2, PM_{10} and $PM_{2.5}$ concentrations 'well below' the relevant objective limits at all proposed receptors. The impact of the Proposed Development in relation to new exposure would, therefore, not be significant.

Ecology

15.16 Overall, the Proposed Development with embedded and additional mitigation will have very few residual effects and none anticipated to be significant under the EIA Regulations. The effects that do remain are discussed for both the construction and operational phases of the Proposed Development in **Table 15.1**.

Table 15.1 Summary of Identified Ecological Impacts

ECOLOGICAL FEATURE	POTENTIAL IMPACT	EMBEDDED AND ADDITIONAL MITIGATION	RESIDUAL IMPACT
Pounce Wood LWS	Sediment Input/Pollution from construction activities. Negative, temporary and significant at Site level.	Stringent Pollution Controls. Production and Implementation of CEMP.	Negligible. Not significant under EIA Regulations.
Arable and arable field margins	Permanent loss of habitat. Significant at Site level.	None.	Permanent loss of habitat. Significant at Site level.
Semi-improved neutral grassland	Loss during construction. Potential for negative permanent impact if appropriate species mix not selected. Significant at Site level.	Each reserved matters application to be accompanied by a LEMP setting out how measurable biodiversity enhancement will be achieved through an appropriate native species mix.	Positive, permanent at a Site level. Not significant under EIA Regulations.
Hedgerows	Land take of species-rich hedgerow for access. Embedded mitigation includes provision for net hedgerow enhancement. Potential for negative impact at Site level if appropriate species mix not selected and hedgerows not safeguarded during construction.	Enforcement of adequate RPAs in line with BS 5837:2012 Trees in Relation to Design, Demolition and Construction. Replacement hedgerow planting to ensure native species rich mix as detailed within a LEMP agreed at the reserved matters stage.	Positive permanent at a Site level. Not significant under EIA Regulations.
Watercourses	Net enhancement of standing water habitat through SuDS scheme. Positive, permanent at the Site level. Potential for construction impacts (direct/indirect) through pollution/incursions negative and temporary at a Site level.	Each reserved matters application to be accompanied by a LEMP setting out how the water features within the final SuDS design will use native species mix to enhance this habitat over the long term. Existing watercourse safeguarded during construction through CEMP.	Positive, permanent at a Site level. Not significant under EIA Regulations. Negligible. Not significant under the EIA Regulations.

ECOLOGICAL FEATURE	POTENTIAL IMPACT	EMBEDDED AND ADDITIONAL MITIGATION	RESIDUAL IMPACT
Reptiles	Potential killing and injuring of individual reptiles during construction if present. Negative permanent at up to a Local level predicted (low confidence). Creation of attenuation ponds, species rich grassland, native shrub, tree planting and wetland grass areas for benefit of reptiles. Positive permanent at the Site level.	The CEMP to include a RAMS Method Statement when construction details are known to minimise impacts during construction to reptiles, should they be present at the time of works. The LEMP to set out measures to enhance the Site for reptiles over the long term including locations of reptile hibernacula, log piles etc.	Negative, temporary at a Site level. Not significant under EIA Regulations. Positive, permanent at a Local level. Not significant under EIA Regulations.
Birds	Loss of habitats including arable fields, field margins which could affect bird species dependent on these habitats e.g. skylark. Negative and permanent at the Site level. Low confidence. Risk of killing or injuring nesting birds during demolition/ vegetation clearance without mitigation. Negative and permanent at Local level. Creation of new scrub and tree and standing water features for benefit range of urban and farmland bird species. Permanent positive and significant at Local level.	Creation of habitats to benefit wide skylark foraging insects through increasing invertebrate diversity (attenuations ponds/native planting). Vegetation removal/building demolition will be undertaken outside of the bird breeding season (March - August inclusive) or under ecological supervision. LEMP to set out detailed landscape planting for benefit of urban and farmland birds including details of nest boxes.	Negative and permanent to arable dependent species at the Site level. Not significant under EIA Regulations. Negligible. Not significant under EIA Regulations. Positive permanent significant at a Local level. Not significant under EIA Regulations.
Bats	Demolition of bat roosts if present at the time of building demolition (low likelihood). Negative and permanent at Site level. Removal of hedgerow affecting roost in T5. Negative, permanent and significant at the Local level. Confidence low.	CEMP to include precautionary method statement should a bat be suspected or found during demolition works should cease and a bat ecologist contacted. Further nocturnal survey of confirmed roosting sites during peak maternity period (June and July) to inform mitigation. Destruction of roosts under EPSL granted by Natural England or a site registration under the Bat Low Impact Class Licence (LICL) with accompanying bat mitigation plan which will include details of replacement roosting provision.	Negligible. Not significant under EIA Regulations. Positive. Permanent at Site level. Not significant under EIA Regulations. Confidence low.

ECOLOGICAL FEATURE	POTENTIAL IMPACT	EMBEDDED AND ADDITIONAL MITIGATION	RESIDUAL IMPACT
Bats	Creation of attenuation ponds and new planting, strengthening of boundary planting for foraging/ commuting bats. Positive, permanent at Local level.	Biodiversity enhancements including the provision of bat boxes on retained standard trees enhance roosting habitats for roosting bats.	Positive. Permanent at Local level. Not significant under EIA Regulations.
	Construction lighting causing disturbance to foraging and commuting bats. New introduced lighting of previously unlit foraging corridors as a result of the Proposed Development. Negative, temporary and permanent up to a Local level.	Implementation of a LEMP to ensure that bat foraging and commuting habitat is maintained and enhanced. Construction works will be restricted to hours of 07:30 to 17:00 Monday to Friday and 08:00-13:00 on Saturday. Impacts limited to areas subject to overnight security lighting. Detailed lighting design and specification, to be prepared at the detailed design stage should be bat friendly and developed with the input of a bat ecologist.	Negligible. Not significant under EIA Regulations. Confidence low.
Hazel dormice	Risk of killing or injuring hazel dormice if present during vegetation clearance without mitigation. Negative and permanent at Local level.	Complete surveys and, if required, no vegetation clearance until a EPSL has been obtained from Natural England or other appropriate mitigation put in place.	Negligible. Not significant under EIA Regulations. Confidence low.
	Loss of sections of hedgerow and connectivity for hazel dormice (if present) to create access. Negative and permanent at Local level.	Complete surveys. The LEMP (and if needed EPS mitigation strategy) to set out how new hedgerows will maintain connectivity for hazel dormice and hedgerow species selection and planting density for their benefit.	Negligible. Not significant under EIA Regulations. Confidence low.
Hazel dormice	Creation of new scrub and hedgerows embedded in layout assumes not for benefit of hazel dormice.	Complete surveys. The LEMP (and if needed EPS mitigation strategy) to set out how new hedgerows will maintain connectivity for hazel dormice and hedgerow species selection and planting density for their benefit.	Positive and permanent and significant at a Local level if dormice are present. Not significant under EIA Regulations. Confidence low.
	Risk of predation from cats introduced from residents of new scheme (if present). Negative and permanent up to a Local level.	Complete surveys. The LEMP (and if needed EPS mitigation strategy) to set out how new hedgerows will maintain, be supplementary planted with appropriate species mix and density to minimise predation.	Negligible. Not significant under EIA Regulations. Confidence low.

ECOLOGICAL FEATURE	POTENTIAL IMPACT	EMBEDDED AND ADDITIONAL MITIGATION	RESIDUAL IMPACT
Otters and water voles	Risk of injury during construction due to use of heavy machinery in proximity to watercourse. Negative temporary and Site level.	Pre-commencement riparian mammal survey and, if present, appropriate mitigation implemented prior to works commencing. Excavations will be covered overnight or left with a plank of wood or similar to ensure that otters do not become trapped. Furthermore, all chemicals will be stored securely as set out in a CEMP.	Negligible. Not significant under EIA Regulations.
	Enhancement of habitat for otters and water voles through attenuation basins if become present. Positive permanent at Site level.	Each reserved matters application to be accompanied by a LEMP setting out how standing water could benefit these species if applicable at that stage.	Potential positive permanent at Site level. Confidence low. Not significant under EIA Regulations.
Hedgehogs, brown hare and terrestrial invertebrates	Risk of injury to hedgehog and brown hare during construction. Negative at the Site level.	CEMP to include measures to safeguard hedgehogs and brown hare during construction.	Negligible. Not significant under EIA Regulations.
	Permanent loss of habitat potentially used by brown hare. Negative and permanent at Site level (if present).	N/A	If present permanent, negative at Site level. Positive. Permanent at Site level. Not significant under EIA Regulations.
	Enhancement of habitats for hedgehogs and invertebrates and connectivity through landscape planting and creation of attenuation ponds. Positive. Permanent at Site level.	LEMP to set out how barrier treatment to fences maintain habitat connectivity and planting benefit hedgehogs. Selection of planting for benefit of invertebrates and installation of bug boxes.	

Flood Risk and Drainage

15.17 The Site is located on land classified as Greenfield, which is currently in use as arable farmland. A minor watercourse flows west through the northern section of the Site alongside the existing track.

15.18 The Site is located within Flood Zone 1 as shown on the Environment Agency Flood Map for Planning. This is the area shown to be at low risk of river flooding with less than 1 in 1,000 annual probability of river flooding (<0.1%).

Construction Phase

15.19 Common instances of water pollution during the construction period can occur from suspended solids, oils and hydrocarbons, concrete products, metal, sewage, other pollutants and hazardous material generated during the construction process. Other hazardous material and suspended solids have the ability to contaminate groundwater which can directly affect the bedrock aquifer within the Site.

15.20 Due to heavy machinery being used around the Site during the construction phase, further compaction of soil is likely. This has the potential to reduce infiltration rates further and lead to excess runoff throughout the Site.

15.21 It is recommended that a CEMP is prepared which will set out detailed methodologies and monitoring requirements to prevent adverse effects on the water environment and flood risk. As a result, there will be negligible residual effects as a result of the construction phase of the Proposed Development.

Operational Phase

15.22 The potential impacts associated with the increase in impermeable areas as a result of the Proposed Development is increased runoff volumes and rates, which could potentially impact on the waterbodies on-site as outfalls, which, without mitigation could potentially lead to an increase in flood risk on-site, downstream of the Site and adjacent third party land.

15.23 The construction of a new residential development will place additional foul drainage capacity loading on the public foul sewer network. Any impact on the foul sewer network will need to be addressed in consultation with Anglian Water under a Section 106 Agreement.

15.24 It is proposed that surface water runoff is limited to the annual average greenfield runoff rate. This approach seeks to mimic the Site's natural drainage regime, which will minimise the impact on the wider catchment. Water will be attenuated at the Site prior to discharge using sustainable urban drainage systems, with storage provided up to the 1 in 100 year plus climate change event. Limiting runoff from the Site, and accommodating it on-site up to the aforementioned event, provides betterment over the current drainage regime.

15.25 Runoff from highways and parking areas will be treated prior to discharge. It is proposed that two levels of treatment area provided in the form of source control techniques, including permeable paving, swales and attenuation basins.

15.26 With the proposed Drainage Strategy in place, there will be a minor beneficial effect by reducing runoff to the surrounding area and providing water quality improvements. All other residual effects during the operational phase were considered to be negligible.

Landscape and Visual

15.27 A Landscape and Visual Impact Assessment has been undertaken to assess the likely significant effects of the Proposed Development on landscape and visual receptors.

15.28 The following landscape and visual receptors were scoped into the assessment:

Landscape

- Landscape elements and resultant landscape patterns;
- Local Landscape Character; and
- Cumulative effects on Local Landscape Character.

Visual

- Group 1: Views from Radwinter Road, north-west and north-east of the Site;
- Group 2: Views from PRoW network north of Radwinter Road;
- Group 5: Views from the Harcamlow Way, north west of the Site; and
- Cumulative effects on visual receptors represented by Groups 1, 2 and 5.

15.29 A variety of primary mitigation has been proposed for inclusion in the Proposed Development which will minimise impacts on the existing landscape elements and resultant landscape patterns and will introduce new landscape features to the Site. Such mitigation includes:

- Woodland blocks on or around ridgelines for screening and views;
- Landscape and green infrastructure has been central to the design and will represent 55% of the Site;
- Green corridors to link public open space on high ground to the south east with public open space in the retained fields on the northern Site boundary;
- Eastern parcel will be well integrated into the landscape to provide a sensitive transition to rural areas; and
- SuDS features will mark the entrance making reference to historic and local landscape features, such as moats.

15.30 With regard to landscape receptors, during the construction phase, the introduction of uncharacteristic materials, machinery and levels of movement would result in a moderate-major adverse effect on landscape elements of the Site and the resultant landscape patterns. The construction activity and further erosion of the existing local landscape character would result in a moderate adverse effect on local landscape character and a minor adverse effect on the settlement identify of Sewards End. However, due to design measures incorporated into the Proposed Development, and the retention of the majority of tree belts within the Site, once the Proposed Development is constructed and mitigation has matured (after 15 years), it is concluded that the Proposed Development will result in a minor neutral effect on landscape features and overall landscape pattern of the Site. The residual effect on the local landscape character was considered to be minor adverse and that the residual effect on the settlement identity of Sewards End was minor/negligible adverse.

15.31 With regard to visual receptors, the assessment has identified that due to the localised topography patterns and patterns of vegetation, the Site has a very constrained visual envelope. Close range views of the Site will be limited to those along Radwinter Road (Group 1). During the construction phase, receptors of this view will experience views of the proposed access road construction for a short stretch (experienced as an altered view for approximately 200m, although the length of vegetation removed is approximately 130m). The removal of vegetation to facilitate the access will allow for glimpsed and partial views of construction of the wider Site. This will result in a minor adverse effect to receptors within Group 1 during construction. Once the road is complete, and the mitigation planting within the Site has matured, it is judged that this effect will not be significant

15.32 The local undulations in topography restrict views of the Site and of the Proposed Development. However, two locations have been identified where the elevated topography allows for panoramic views across to the Site. These are from the PRoW network north of Radwinter Road (Group 2) and from Harcamlow Way, north-west of the Site (Group 5). In both instances, elevated and panoramic views to the eastern edge of Saffron Walden are possible and the Site is visible as two arable fields at the junction between the wider rural setting and the settlement edge of Saffron Walden. During the construction phase, uncharacteristic materials and levels of activity and movement will be visible on the Site, in the background of the view. It will be viewed alongside the Linden Homes development, and viewed as an extension of residential development into the countryside surrounding Saffron Walden. During the construction phase, this will result in a moderate-major (significant) effect on receptors of Group 5 and a moderate effect on receptors within Group 2. For Group 2, as a result of the mitigation designed into

the Proposed Development, once construction is complete and the mitigation planting has matured, the overall effect will have reduced to minor adverse. Due to its elevation and the low incidence of intervening vegetation to screen views, Group 5 receptors will, however, continue to experience moderate effects (not significant), as a result of views experienced of residential development extending into the elevated, rural landscape.

Noise

15.33 The noise climate at the Site is influenced by road traffic noise, primarily from Radwinter Road, which borders the Site to the north and the existing noise levels at the Site have been established by direct measurement.

15.34 The construction phase of the Proposed Development has been considered to determine whether construction noise and vibration is likely to lead to significant effects at the noise and vibration sensitive receptors close to the Site. The following conclusions have been reached:

- Construction noise may lead to significant adverse effects at noise-sensitive receptors without mitigation measures when works are undertaken on the boundaries of the Site closest to the receptors. However, these significant effects would only occur for a short duration and for the majority of the time, no significant effects would occur;
- Construction vibration may to lead to significant adverse effects at noise-sensitive receptors without mitigation measures when works are undertaken on the boundaries of the Site closest to the receptors. However, these significant effects would only occur for a short duration and for the majority of the time, no significant effects would occur; and
- The effect of construction traffic on off-site road traffic noise levels will not be significant.

15.35 The operational phase of the Proposed Development has been considered to determine whether operational road traffic noise is likely to lead to significant effects at the noise-sensitive receptors close to the Site. No significant effects are likely.

15.36 A range of best practice mitigation measures has been suggested to reduce noise and vibration levels from construction, tried and tested measures whereby their effectiveness can be relied upon and controlled through suitably worded planning conditions. However, even with these measures in place, significant adverse effects could still occur at noise-sensitive receptors when works are undertaken on the boundaries of the Site closest to the receptors. However, these significant effects would only occur for a short duration and for the majority of the time, no significant effects would occur, even without taking into account mitigation. Given the nature of the effect, there would be no long-term residual effects of significance.

Socio-Economics and Health

15.37 During the construction period, the Proposed Development is likely to generate 148 jobs, therefore, resulting in a minor beneficial residual effect.

15.38 Once complete and occupied, the Proposed Development will result in an increase of approximately 501 people to the area which will put demand on local services and will, therefore, have a minor adverse residual effect.

15.39 The Uttlesford District Council Housing Delivery Test and 5-Year Land Supply Statement (Uttlesford District Council, 2021) identifies a housing requirement of 706 dwellings per year. Based on the Proposed Development delivering 40 units a year, this would equate to approximately 5.7% of the annual target of 706 dwellings a year. The Proposed Development would make a valuable contribution to the housing supply in the district and will have a minor

beneficial residual effect.

15.40 It is estimated that, on completion, total annual household expenditure would be £7.3 million. The Proposed Development is also estimated to house approximately 356 new working age (16 to 75 year olds) people, which is approximately 0.7% of the employed people in the district. This increase in local spending and introduction of new employees to the area was considered to have a minor beneficial residual effect.

15.41 The Proposed Development would create the need for approximately:

- 10 additional early years and childcare provision;
- 56 additional primary school;
- 37 additional secondary school places; and
- 8 post 16 years old education.

15.42 Land for provision of a new primary school has been included in the housing development schemes (UTT/16/1856/DFO and UTT/17/2832/OP) located just to the west of the Site.

15.43 The Essex School Organisation Service's 10 year plan suggests that there would be capacity in secondary schools and primary schools over the next ten years, although a new primary school may be required to meet the demand from new housing. The demand on educational facilities in the local area was considered to have a minor adverse residual effect.

15.44 The Proposed Development would result in approximately 501 new residents, which is an increase of approximately 0.2% of the population within the West Essex CCG and an increase of 2.1% of the registered patients at GP surgeries within 5km of the Site. This increase in demand on healthcare facilities in the local area was considered to have a minor adverse residual effect.

15.45 The Proposed Development includes new Green Infrastructure and recreational facilities for the existing and new communities. In addition, the Masterplan includes for approximately 10ha of public open space, which accounts for approximately 55% of the Site. The provision for open space is considered a minor beneficial residual effect.

15.46 The Masterplan for the Proposed Development has been designed to minimise the potential for crimes to occur, which was considered a minor beneficial residual effect.

15.47 With regards to health, The HUDU Rapid HIA checklist has considered the potential health impacts as a result of the Proposed Development across eleven key topic areas. Across the eleven topics of focus, none of the relevant health considerations are expected to see a negative impact. A large number of the points considered have minor positive or neutral benefits for existing and new residents in areas such as housing design and inclusivity, and access to open space.

Transport

15.48 The TA has identified and assessed the impacts of the Proposed Development in relation to the likely significant effects it would have on:

- Severance;
- Driver delay;
- Pedestrian delay and amenity;

- Accidents and safety;
- Hazardous loads; and
- Fear and intimidation.

15.49 In assessing the above impacts, the assessment has considered the following matters:

- 2023 Baseline Year;
- Assessment year (2026) baseline conditions (including committed development);
- Proposed Development construction; and
- Proposed Development with associated highway improvements (2026).

15.50 The assessment concludes that following the implementation of a CEMP, including restrictions on vehicle routing and working times, it is considered that these management strategies will minimise the potential effects associated with construction activity. Therefore, for severance, pedestrian delay, amenity, accidents and safety and fear and intimidation, it is considered that there would be a temporary (short-term) minor adverse impact as a result of the CEMP within the vicinity of the Site associated with ongoing construction activity. For driver delay, it is considered that there will continue to be a temporary (short-term) minor adverse impact.

15.51 As well as the inherent mitigation included as part of the design of the Proposed Development, the following mitigation measures have been included in the Proposed Development to mitigate any potential operational transport impacts. These include:

- Improvements at the Radwinter Road / Thaxted Road / East Street / Chaters Hill junction to provide a short right turn lane on Radwinter Road;
- Upgrading of the existing mini-roundabout at the junction of Thaxted Road / Peaslands Road to provide a traffic signal controlled junction;
- Upgrading of the existing priority controlled junction of High Street / Church Street to provide a traffic signal controlled junction; and
- Travel Plan.

15.52 Following the implementation of the mitigation mentioned above, there will be minor adverse operational residual effects with the exception of severance which was considered to be negligible. Therefore, in line with the NPPF, the application should not be refused on transport grounds as the impact is not singularly or cumulatively severe.

Summary of Mitigation Measures and Residual Effects

15.53 **Table 15.2** provides a summary of the mitigation measures proposed, as a result of the assessment process for each of the environmental aspects considered, which have been demonstrated through this ES and can be implemented either through planning conditions or legal agreement.

15.54 The residual impacts are those effects that remain post-mitigation. Each of the technical chapters contained within this ES contains a detailed assessment of the residual impacts in respect of both the construction and operational phases of the Proposed Development.

15.55 The design proposals have evolved with, and been informed by the EIA process, in order to minimise any identified environmental effects as the design has progressed. However, where this has not been possible to fully resolve through the design, within each technical chapter, a range of measures have been incorporated into the scheme to help mitigate potential negative effects.

15.56 A summary of the residual impacts (i.e those impacts remaining after mitigation) for the Proposed Development is also contained within **Table 15.1**.

Table 15.1: Summary of Mitigation and Residual Effects

ENVIRONMENTAL ASPECT	DESCRIPTION OF EFFECT	SIGNIFICANCE	MITIGATION MEASURES PROPOSED	MECHANISM OF CONTROL/DELIVERY	RESIDUAL EFFECT
Agriculture	Loss of grade 2 agricultural land	Minor Adverse	N/A	N/A	Minor Adverse
	Loss of subgrade 3a agricultural land	Minor Adverse	N/A	N/A	Minor Adverse
	Loss or damage to soil	Moderate Adverse	Site-specific Soils Management Plan	Planning Condition	Negligible
	Loss of 13.1ha of tenanted land with 1 year on contract	Minor Adverse	Phased development allowing use of land up to termination of contract/completion of construction which can be outlined in a CEMP	Planning Condition	Minor Adverse
Air Quality	Impact of Construction Dust and PM_{10}	Moderate Adverse	CEMP	Planning Condition	Negligible
	Impact of Operational Traffic NO_2, PM_{10} and $PM_{2.5}$	Negligible	Implementation of a Travel Plan	Planning Condition/Legal Agreement	Negligible
	New Exposure NO_2, PM_{10}, $PM_{2.5}$	Negligible	N/A	N/A	Negligible
Ecology	Sediment/pollution to Pounce LWS during the construction phase	Moderate/Minor Adverse (Site Level)	CEMP	Planning Condition	Negligible (Site Level)
	Arable and arable field margins - Permanent loss of habitat	Major/Moderate Adverse (Site Level)	None	N/A	Major/Moderate Adverse (Site Level)
	Semi-improved neutral grassland - loss during construction	Moderate Adverse (Site Level)	LEMP at reserved matters stage to set out how measurable biodiversity enhancement will be achieved through an appropriate native species mix	Planning Condition	Minor Beneficial (Site Level)

ENVIRONMENTAL ASPECT	DESCRIPTION OF EFFECT	SIGNIFICANCE	MITIGATION MEASURES PROPOSED	MECHANISM OF CONTROL/DELIVERY	RESIDUAL EFFECT
Ecology	Hedgerows - Landtake and removal of species-rich hedgerow to facilitate site access	Moderate/Minor Adverse (Site Level)	Embedded mitigation includes provision for net hedgerow enhancement Enforcement of adequate Root Protection Areas (RPAs) in line with BS 5837:2012 Trees in Relation to Design, Demolition and Construction Replacement hedgerow planting to ensure native species rich mix as detailed within a LEMP agreed at the reserved matters stage	Design as proposed Planning Condition Planning Condition	Minor Beneficial (Site Level)
	Watercourses - impact on watercourses during construction	Minor Adverse	Existing watercourse safeguarded through CEMP	Planning Condition	Negligible
	Watercourses - Net enhancement of standing water habitat through SuDS scheme	Negligible	LEMP at reserved matters stage setting out how the water features within the final SuDS design will use native species mix to enhance this habitat over the long term	Planning Condition	Minor Beneficial (Site Level)
	Reptiles - Impact to reptiles during construction	Moderate Adverse (Local Level)	Reasonable Avoidance Method Statement (RAMS) included within CEMP	Planning Condition	Minor Adverse (Site Level)
	Reptiles - Enhancement of reptile habitat	Minor Beneficial (Site Level)	LEMP at reserved matters stage to set out measures to enhance habitat on-site for reptiles	Planning Condition	Minor Beneficial (Local Level)
	Birds - Impact on farmland birds through loss or arable crop habitat	Moderate Adverse (Local Level)	Creation of habitats to benefit wider skylark foraging insects through increasing invertebrate diversity (attenuations ponds/native planting)	Design as proposed	Minor Adverse, (Site Level)
	Birds - Impact on nesting birds during construction	Moderate Adverse (Local Level)	Vegetation removal and any demolition will be undertaken outside of the bird breeding season (March - August inclusive) or under ecological supervision as specified in the CEMP	Planning Condition	Negligible
	Birds - Impact on generalist birds through increased provision of nesting and foraging habitat	Negligible/Minor Beneficial (Local Level)	LEMP to set out detailed landscape planting for benefit of urban and farmland birds including details of nest boxes	Planning Condition	Minor Beneficial (Local Level)

ENVIRONMENTAL ASPECT	DESCRIPTION OF EFFECT	SIGNIFICANCE	MITIGATION MEASURES PROPOSED	MECHANISM OF CONTROL/DELIVERY	RESIDUAL EFFECT
Ecology	Bats - Impact on bat roosts during construction, including disturbance of construction lighting on foraging and commuting bats	Moderate/Minor Adverse (Site Level)	CEMP to include construction lighting mitigations, and precautionary method statement should a bat be suspected or found during demolition works (low likelihood) should cease and a bat ecologist contacted	Planning Condition	Negligible
	Bats - Removal of hedgerow affecting bat roost in T5	Moderate/Minor Adverse (Local Level)	Further nocturnal survey confirmed roosting sites during peak maternity period (June and July) to inform mitigation. Destruction of roosts under European Protected Species (EPS) licence granted by Natural England or a site registration under the Bat Low Impact Class Licence (LICL) with accompanying bat mitigation plan which will include details of replacement roosting provision Biodiversity enhancements including the provision of bat boxes on retained standard trees enhance roosting habitats for roosting bats	Planning Condition(s)	Minor Beneficial (Site Level)
	Bats - Creation of attenuation ponds and new planting, strengthening of boundary planting for foraging/commuting bats	Negligible/Minor Beneficial (Local Level)	LEMP at reserved matters stage to include detail on enhancing habitat for foraging and commuting bats	Planning Condition	Minor Beneficial (Local Level)
	Hazel Dormice - Impacts to hazel dormice during construction	Minor Adverse (Local Level)	CEMP and if required EPS Licence from Natural England	Planning Condition	Negligible
	Hazel Dormice - Enhancement of hazel dormice habitat embedded in layout	Negligible/Minor Beneficial	The LEMP at reserved matters stage to set out how new hedgerows will maintain connectivity for hazel dormice and hedgerow species selection and planting density for their benefit	Planning Condition	Minor Beneficial (Local Level)

ENVIRONMENTAL ASPECT	DESCRIPTION OF EFFECT	SIGNIFICANCE	MITIGATION MEASURES PROPOSED	MECHANISM OF CONTROL/DELIVERY	RESIDUAL EFFECT
Ecology	Hazel Dormice - Risk of predation from cats introduced from residents of the Proposed Development	Minor Adverse (Local Level)	Complete surveys. The LEMP (and, if needed, EPS mitigation strategy) to set out how new hedgerows will be maintained and be supplementary planted with appropriate species mix and density to minimise predation	Planning Condition	Negligible
	Otters & Water Voles - Impact on otters and water vole during construction	Minor Adverse (Site Level)	Pre-commencement riparian mammal survey and, if present, appropriate mitigation implemented prior to works commencing. Excavations will be covered overnight or left with a plank of wood or similar to ensure that otters do not become trapped. Furthermore, all chemicals will be stored securely as set out in a CEMP	Planning Condition	Negligible
	Otters & Water Voles - Impact on otters and water vole through enhancement of habitat	Negligible/Minor Beneficial (Site Level)	LEMP at reserved matters stage to include detail on enhancing the habitat on-site for otter and water vole	Planning Condition	Minor Beneficial (Site Level)
	Impacts on brown hare and hedgehog during construction	Minor Adverse (Site Level)	CEMP to include measures to safeguard hedgehogs and brown hare during construction	Planning Condition	Negligible
	Enhancement of habitats for hedgehogs and terrestrial invertebrate assemblages	Negligible/Minor Beneficial (Site Level)	LEMP at reserved matters stage to set out detail of planting for benefit of hedgehogs, invertebrates and installation of bug boxes	Planning Condition	Minor Beneficial (Site Level)
Flood Risk and Drainage	Impacts of construction on watercourse water quality	Moderate/Minor Adverse	CEMP	Planning Condition	Negligible
	Impacts of construction on watercourse flood risk and temporary flood risk	Minor Adverse/ Negligible	CEMP	Planning Condition	Negligible
	Impacts of construction on watercourse geomorphology	Minor Adverse/ Negligible	CEMP	Planning Condition	Negligible
	Impacts of construction on surface water flood risk and temporary surface water flood risk	Minor Adverse	CEMP	Planning Condition	Negligible

ENVIRONMENTAL ASPECT	DESCRIPTION OF EFFECT	SIGNIFICANCE	MITIGATION MEASURES PROPOSED	MECHANISM OF CONTROL/DELIVERY	RESIDUAL EFFECT
Flood Risk and Drainage	Impacts of construction on surface water quality	Moderate/Minor Adverse	CEMP	Planning Condition	Negligible
	Impacts of construction on groundwater	Minor Adverse/ Negligible	CEMP	Planning Condition	Negligible
	Impacts of construction on the public sewer network	Minor Adverse	Prior approval from Anglian Water	N/A	Negligible
	Impacts of the Proposed Development on surface water flood risk	Minor Adverse	Surface Water Drainage Strategy/development layout/ raised finished floor levels	Design as proposed	Negligible
	Impacts of the Proposed Development on watercourse flood risk	Minor Adverse/ Negligible	Surface Water Drainage Strategy/development layout/ raised finished floor levels/location of Site in Flood Zone 1	Design as proposed	Negligible
	Impacts of the Proposed Development on surface water quality	Moderate/Minor Adverse	Surface Water Drainage Strategy	Design as proposed	Minor Beneficial
	Impacts of the Proposed Development on watercourse water quality	Moderate/Minor Adverse	Surface Water Drainage Strategy	Design as proposed	Negligible
	Impacts of the Proposed Development on the public sewer network	Moderate/Minor Adverse	Agreement with Anglian Water for sewer network capacity upgrade where required	Legal Agreement	Negligible
Landscape & Visual	**Landscape Receptors**				
	Landscape elements and landscape pattern of the Site	Construction Phase: Moderate-Major Adverse One year post completion: Moderate Adverse	Although housing will replace the existing agricultural land use, the retention of the existing field boundaries will minimise the change to the landscape pattern. Introduction of characteristic landscape features to the Site (woodland blocks on high ground, SuDS features inspired by the shape and form of local moats, strengthening of existing tree belts with additional tree planting) will help to integrate the Site to the surrounding landscape character	Embedded within Masterplan Design & Planning Conditions	Minor Neutral Adverse

ENVIRONMENTAL ASPECT	DESCRIPTION OF EFFECT	SIGNIFICANCE	MITIGATION MEASURES PROPOSED	MECHANISM OF CONTROL/DELIVERY	RESIDUAL EFFECT
Landscape & Visual	Introduction of uncharacteristic elements to the Site and impact upon local landscape character	Construction Phase: Moderate Adverse One year post completion: Moderate - Minor Adverse	Although housing will replace the existing agricultural land use, the retention of existing landscape features along the Site boundaries, and introduction of landscape elements typical of the local landscape (woodland blocks on high ground, SuDS features inspired by the shape and form of local moats, strengthening of existing tree belts with additional tree planting) will minimise the impact of the introduced new housing	Embedded within Masterplan Design & Planning Conditions	Minor Adverse
	Settlement identity of Sewards End	Construction Phase: Minor Adverse One year post completion: Minor Adverse		Embedded within Masterplan Design & Planning Conditions	Minor-Negligible Adverse
	Visual Receptors				
	Group 1: Views from the North (Radwinter Road - Viewpoint 1 & 2)	Construction Phase: Minor Adverse One Year Post Completion: Minor Adverse	Tree planting along Radwinter Road is retained with the exception of tree removal to provide access. The small, linear field in the north of the Site is retained as open space, with adjacent hedge-row retained. The retained field boundaries will minimise views of proposed construction activity	Embedded within Masterplan Design & Planning Conditions	Negligible
	Group 2 - Views from Footpaths to the north - Viewpoints 3 and 3.a)	Construction Phase: Moderate Adverse One Year Post Completion: Moderate/Minor Adverse	The most visible part of the Site is the southern portion, on the highest land. This area is retained as public open space and minimal construction activity will be undertaken. Groups of trees are proposed within the public open space, referencing the characteristic visual feature of woodland blocks on hilltops.	Embedded within Masterplan Design & Planning Conditions Planning Conditions	Minor Adverse

ENVIRONMENTAL ASPECT	DESCRIPTION OF EFFECT	SIGNIFICANCE	MITIGATION MEASURES PROPOSED	MECHANISM OF CONTROL/DELIVERY	RESIDUAL EFFECT
Landscape & Visual	Group 3: Views from PRoW to the south (Viewpoints 4, 5, 9 and 10	Negligible	The proposed Site and mitigation would not be visible to these receptors	N/A	Negligible
	Group 4: View from western Saffron Walden on higher ground (Viewpoints 6 & 12)	Negligible	The proposed Site and mitigation would not be visible to these receptor	N/A	Negligible
	Group 5: Views from PRoW to the north-west of the site (Viewpoints 7 & 7a)	Construction Phase: Moderate/ Major Adverse One Year Post Completion: Moderate/Major Adverse	The most visible part of the Site is the southern portion, on the highest land. This area is retained as public open space and minimal construction activity will be under-taken. Boundary vegetation surrounding the Site will be retained, and will help to retain an element of continuity to views experienced.	Embedded within Masterplan Design and Planning Conditions	Moderate Adverse
	Group 6: Views from PRoW to the north-east of the site (Viewpoint 8 & 13)	Negligible	The proposed Site and mitigation would not be visible to these receptors	N/A	Negligible
	Group 7: Views from Beechy Ride PRoW, south-west of the Site (Viewpoint 11)	Negligible	The proposed Site and mitigation would not be visible to these receptors	N/A	Negligible
Noise and Vibration	Construction Noise – When works undertaken at the Turnip Hall Farm	Major Adverse	CEMP	Planning Condition	Major Adverse
	Construction Noise – When works undertaken at Pearson Road, Sativus Close, Fairfax Drive	Minor Adverse	CEMP	Planning Condition	Minor Adverse
	Construction Noise – When works undertaken at 1 Radwinter Road, The Vineyard	Negligible	CEMP	Planning Condition	Negligible

ENVIRONMENTAL ASPECT	DESCRIPTION OF EFFECT	SIGNIFICANCE	MITIGATION MEASURES PROPOSED	MECHANISM OF CONTROL/DELIVERY	RESIDUAL EFFECT
Noise and Vibration	Construction Noise – When works undertaken at average distance from receptors	Negligible	CEMP	Planning Condition	Negligible
	Construction Vibration – When works undertaken at Turnip Hall Farm	Moderate Adverse	CEMP	Planning Condition	Moderate Adverse
	Construction Vibration – When works undertaken at Pearson Road, Sativus Close, Fairfax Drive, 1 Radwinter Road, The Vineyard	Minor Adverse	CEMP	Planning Condition	Minor Adverse
	Construction Vibration – When works undertaken at average distance from receptors	Negligible	CEMP	Planning Condition	Negligible
	Construction Traffic	Negligible	CEMP	Planning Condition	Negligible
	Operational Traffic – All links except Newport (Link ID K1) in short-term, all links in long-term	Negligible	None proposed	N/A	Negligible
	Newport (Link ID K1) in short-term	Minor Beneficial	None proposed	N/A	Minor Beneficial
Socio-Economics	**Construction**				
	Direct, indirect an induced employment	Minor Beneficial	N/A	N/A	Minor Beneficial
	Operation				
	Housing provision	Minor Beneficial	N/A	N/A	Minor Beneficial
	Increase in economic growth and employment	Minor Beneficial	N/A	N/A	Minor Beneficial
	Increase demand in education	Minor Adverse	N/A	N/A	Minor Adverse
	Increase demand for healthcare	Minor Adverse	N/A	N/A	Minor Adverse
	Open space	Minor Beneficial	N/A	N/A	Minor Beneficial
	Crime reduction and safety	Minor Beneficial	N/A	N/A	Minor Beneficial

ENVIRONMENTAL ASPECT	DESCRIPTION OF EFFECT	SIGNIFICANCE	MITIGATION MEASURES PROPOSED	MECHANISM OF CONTROL/DELIVERY	RESIDUAL EFFECT
Transport	**Construction Phase**				
	Severance	Moderate Adverse	CEMP	Planning Condition	Minor Adverse
	Driver delay	Minor Adverse	CEMP	Planning Condition	Minor Adverse
	Pedestrian delay and amenity	Moderate Adverse	CEMP	Planning Condition	Minor Adverse
	Accidents and safety	Moderate Adverse	CEMP	Planning Condition	Minor Adverse
	Hazardous loads	No change	CEMP	Planning Condition	Minor Adverse/ Negligible
	Fear and intimidation	Moderate Adverse	CEMP	Planning Condition	Minor Adverse
	Operational Development				
	Severance	Negligible	Highway Improvements at three junctions. New footway link on Radwinter Road. Provision of new bus stops and financial contribution to bus service provision. Travel Plan.	Design as Proposed Travel Plan can be secured by Planning Condition, and financial contributions via S106 Agreement.	Negligible
	Driver delay	Moderate Adverse			Minor Adverse
	Pedestrian delay and amenity	Minor Adverse			Minor Adverse
	Accidents and safety	Minor Adverse			Minor Adverse
	Hazardous loads	No change			Minor Adverse/ Negligible
	Fear and intimidation	Minor Adverse			Minor Adverse

Concluding Remarks

15.57 As illustrated in **Table 15.2**, the residual impacts arising from the Proposed Development range from Minor Beneficial to Minor/Moderate Adverse with the majority of impacts being considered negligible or not significant. Many of the adverse impacts are short-term and temporary in nature with most being reduced in their significance with time and as the effectiveness of tried and tested mitigation measures are put in place to further manage and reduce these impacts.

15.58 The exception to this relates to an existing receptor (Turnip Hall Farm) on the Site boundary, where at very specific times of construction there is the residual potential for major adverse construction noise impacts. However, the duration of these impacts are expected to be limited, temporary and short in duration over the construction period.

15.59 After considering realistic alternative designs and layouts for the Proposed Development, and taking into account proposed mitigation measures, it has been demonstrated that where possible, through the design evolution of the proposals, the potential environmental effects have been avoided, or where this is not possible, the potential environmental effects have been reduced through mitigation. This has resulted in delivering an overall scheme which has had regard to minimising its environmental effects and delivering a sustainable form of development which achieves this.

References

References

Air Quality Consultants 2020 Emission Factor Toolkit Online at https://www.aqconsultants.co.uk/news/march-2020/defra%E2%80%99s-emission-factor-toolkit-now-matching-measu

Air Quality Regulations 2010 – Statutory Instrument 2010 No. 1001 Online at https://www.legislation.gov.uk/uksi/2010/1001/contents/made

ARG UK (2010) ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. Amphibian and Reptile Groups of the United Kingdom.

Ark Consultants, (2020); *Uttlesford And Braintree District Councils: Housing for New Communities in Uttlesford and Braintree*.

Bat Conservation Trust (BCT) 2016. Bat Surveys for Professional Ecologists, Good Practice Guidelines, 3rd Edition

BCT (2015) Surveying for Bats in Trees and Woodland – Guide

BJ Unwin Forestry Consultancy (2021) Tree Impact and Tree Protection Method Statement

Bright, P., Morris, P. and Mitchell-Jones, T. (2006) The dormouse conservation handbook. Second edition. English Nature, Peterborough.

British Geological Survey (2021) Geology of Britain Viewer. Online at http://mapapps.bgs.ac.uk/geologyofbritain/home.html?&_ga=2.93601565.1617062886.1611052673-1868461616.1604492042 Accessed February 2021

British Standard 5228: 2009+A1: 2014 *Code of practice for noise and vibration control on construction and open sites*, BSi (2014)

Calculation of Road Traffic Noise, Department of Transport etc al (1988)

Care Quality Commission, Active locations for providers registered under the Health and Social Care Act (HSCA) (2021). Online at https://www.cqc.org.uk/about-us/transparency/using-cqc-data, accessed 17/05/21.

CIEEM (2018) Guidelines for Preliminary Ecological Appraisal. 2nd Edition. CIEEM, Winchester.

Committee on Climate Change, (2016); *UK Climate Change Risk Assessment 2017 Evidence Report*.

Cranfield Soil and AgriFood Institute (2021) Soilscapes Map. Online at http://www.landis.org.uk/soilscapes/ Accessed February 2021

Daynurseries.co.uk Reviews for Day Nurseries & Nursery Schools. Online at https://www.daynurseries.co.uk/, accessed 21/04/21.

Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016) The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Mathews, F. and Chanin, P. The Mammal Society, London.

Defra 2020 NO_x to NO_2 converter Online at https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html#NOxNO2calc

Defra 2020 UK Air Information Resource Emissions Factor Tool Kit, Online at https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html

Defra MAGIC online at https://magic.defra.gov.uk/MagicMap.aspx

Defra, 2018 UK Air Information Resource Background Mapping Online at https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

Department for Environment Food and Rural Affairs, Local Air Quality Management Policy Guidance (PG16), LAQM.PG(16) Online at https://www.legislation.gov.uk/ukpga/1990/43/contents

Department for Environment Food and Rural Affairs, Local Air Quality Management Technical Guidance, LAQM. TG(16) Online at https://laqm.defra.gov.uk/technical-guidance/

Department for the Environment, Food & Rural Affairs (DEFRA) (2021) Magic Map Application. Online at https://magic.defra.gov.uk/MagicMap.aspx Accessed February 2021

Department of Education, Get information about schools (2021). Online at https://www.get-information-schools.service.gov.uk/, accessed 21/04/21.

Design Manual for Roads and Bridges (DMRB) LA 111 *Noise and vibration* (2020)

Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe Online at https://www.legislation.gov.uk/eudr/2008/50/contents

Environment Agency (2021) Flood Map for Planning. Online at https://flood-map-for-planning.service.gov.uk/ Accessed February 2021

Environment Agency (2021) Long Term Flood Risk Map. Online at https://flood-warning-information.service.gov.uk/long-term-flood-risk/map Accessed February 2021

Essex County Council (2020) The Sustainable Drainage Systems Design Guide for Essex. Online at https://www.essexdesignguide.co.uk/suds Accessed March 2021

Essex County Council, (2019); *Essex County Council Developers' Guide to Infrastructure Contributions (2019)*.

Essex County Council, (2019); *Joint Strategic Needs Assessment 2019: Uttlesford Local Authority Profile*.

Essex School Organisation Service, (no date); *10 Year Plan: Meeting the demand for school places in Essex 2021 – 2030*.

H. Masters-Williams et al, (2001) Control of Water Pollution from Construction sites. Guidance for consultants and contractors (C532). London. Construction Industry Research & Information Association (CIRIA).

Home Builders Federation, (2018); *The Economic Footprint of House Building in England and Wales*.

IAQM (2014) Guidance on the Assessment of Dust from Demolition and Construction Version 1.1, IAQM, London

IAQM (2017) Land Use Planning & Development Control: Planning for Air Quality, IAQM, London

IEMA (1993) Guidelines for the Environmental Assessment of Road Traffic

ILP (2018) Bats and artificial lighting in the UK. Guidance Note 08/18. Bat Conservation Trust, London

Investment and Performance Board, Measuring Jobs from the Housing Programme. 2014. Online at: https://www.london.gov.uk/moderngovmb/documents/s38594/Measuring%20Jobs_Appendix%203.pdf, accessed 01/06/21.

JBA Consulting, (2016) Uttlesford District Council Strategic Flood Risk Assessment (SFRA). Online at https://www.uttlesford.gov.uk/media/5545/Uttlesford-Strategic-Flood-Risk-Assessment-May-2016/pdf/2015s2938_-_Uttlesford_SFRA_v3.0.pdf?m=636005689900470000 Accessed March 2021

JNCC (2010) Handbook for Phase 1 habitat survey - A technique for environmental audit. JNCC, Peterborough.

Knight, Kavanagh & Page Ltd, (2019a); Uttlesford District Council *Indoor and Built Facilities Strategy Report February 2019.*

Knight, Kavanagh & Page Ltd, (2019b); *Uttlesford District Council Playing Pitch Strategy Assessment Report May 2019*.

Knight, Kavanagh & Page Ltd, (2019c); *Uttlesford District Council Open Space Assessment Report February 2019*.

Knight, Kavanagh & Page Ltd, (2019d); *Uttlesford District Council Open Standards Paper February 2019*.

Land Registry, UK House Price Index. Online at https://landregistry.data.gov.uk/app/ukhpi, accessed 21/04/21.

Lichfields and Home Builders Federation, 2018; *The Economic Footprint of House Building in England and Wales.*

Ministry of Housing, Communities & Local Government, English indices of deprivation (2019). Online at https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019, accessed 21/04/21.

Ministry of Housing, Communities and Local Government, (2021) National Planning Policy Framework (NPPF). London. Controller of Her Majesty's Stationery Office

Ministry of Housing, Communities and Local Government, (2019) National Planning Policy Practice Guidance (PPG). Online at https://www.gov.uk/government/collections/planning-practice-guidance Accessed May 2021

Ministry of Housing, Communities and Local Government: National Planning Policy Framework (February 2019) Online at https://www.gov.uk/government/publications/national-planning-policy-framework--2

Mitchell-Jones, A.J, & McLeish, A.P. Ed. 2004. Bat Workers' Manual 3rd Edition

Natural England (2015) Monitor of Engagement with the Natural Environment file:///C:/Users/rob.harrison/Downloads/152001%20MENE%20Year%205%20Annual%20Report.pdf [accessed 06/11/2018]

NHS Digital, General Practice Workforce 31 March 2021. Online at https://digital.nhs.uk/data-and-information/publications/statistical/general-and-personal-medical-services/31-march-2021, accessed 19/05/21.

NHS, Find Services Near You (2021). Online at https://www.nhs.uk/service-search, accessed 19/05/21.

Oldham et al., 2000. Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus). Herpetological Journal 10, 143-155

ONS, Annual Population Survey (2020). Online at https://www.nomisweb.co.uk/home/detailedstats.asp, accessed 18/05/21.

ONS, Business Register and Employment Survey (2020). Online at https://www.nomisweb.co.uk/home/detailedstats.asp, accessed 18/05/21.

ONS, Census 2001 (2001). Online at https://www.nomisweb.co.uk/home/detailedstats.asp, accessed 21/04/21.

ONS, Census 2011 DC4405EW - KS101EW - Tenure by household size by number of bedrooms (2011). Online at https://www.nomisweb.co.uk/home/detailedstats.asp, accessed 24/05/21.

ONS, Census 2011 KS101EW - Usual resident population (2011). Online at https://www.nomisweb.co.uk/home/detailedstats.asp, accessed 21/04/21.

ONS, Census 2011 KS402EW – Tenure (2011). Online at https://www.nomisweb.co.uk/home/detailedstats.asp, accessed 21/04/21.

ONS, Census 2011 KS501EW - Qualifications and students (2011). Online at https://www.nomisweb.co.uk/home/detailedstats.asp, 21/04/21.

ONS, Census 2011 KS601EW to KS603EW (2011). Online at https://www.nomisweb.co.uk/home/detailedstats.asp, 18/05/21.

ONS, Census 2011 QS102UK - Population density (2011). Online at https://www.nomisweb.co.uk/home/detailedstats.asp, accessed 21/04/21.

ONS, Family spending in the UK: April 2019 to March 2020 (2021). Online at: https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/expenditure/bulletins/familyspendingintheuk/april2019tomarch2020, accessed 24/05/21.

ONS, Population estimates (2019). Online at https://www.nomisweb.co.uk/home/detailedstats.asp, accessed 21/04/21.

Open Research Services, (2017); *West Essex and East Hertfordshire Strategic Housing Market Assessment: Establishing the Full Objectively Assessed Need*.

Organisational Intelligence and Essex County Council, (2016). *Essex Local Authority Portraits A product of the Essex Joint Strategic Needs Assessment (JSNA): A profile of people living in Uttlesford*.

Peay, S. (2003) Monitoring the White-clawed Crayfish Austropotamobius pallipes. Conserving Natura 2000 Rivers Monitoring Series No. 1, Peterborough: English Nature.

Saffron Walden Reporter (2016) Flooded roads cause traffic disruption around Saffron Walden. Online at https://www.saffronwaldenreporter.co.uk/news/flooded-roads-cause-traffic-disruption-around-saffron-walden-5332978 Accessed March 2021

Saffron Walden Town Council, Visit Saffron Walden, Online at https://www.visitsaffronwalden.gov.uk/, accessed 18/05/21.

Secretary of State, The Environment Act 1990 HMSO Online at https://www.legislation.gov.uk/ukpga/1990/43/contents

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland – July 2007 Online at https://www.gov.uk/government/publications/the-air-quality-strategy-for-england-scotland-wales-and-northern-ireland-volume-1

TRL (1991) The Appraisal of Community Severance. Contractors Report 135.

TRL Report 53 Ground vibration caused by civil engineering works, Transport Research Laboratory (1986)

Uttlesford District Council (2005) Local Plan. Online at https://www.uttlesford.gov.uk/local-plan-2005 Accessed March 2021

Uttlesford District Council (2016) Strategic Flood Risk Assessment. Online at https://www.uttlesford.gov.uk/article/4937/Environment Accessed March 2021

Uttlesford District Council (2018) Air Quality Technical Planning Guidance, Uttlesford District Council, Uttlesford

Uttlesford District Council, Uttlesford Local Plan (Adopted 2005), Online at: https://www.uttlesford.gov.uk/media/4723/Uttlesford-Local-Plan-Adopted-January-2005/pdf/Local_Plan_2005.pdf?m=637471937917270000, accessed 25/05/21

Uttlesford District Council, Uttlesford Local Plan, January 2005 Online at https://www.uttlesford.gov.uk/local-plan-2005

Uttlesford District Council, (2021); Housing Delivery Test and 5-Year Land Supply Statement, Online at: https://www.uttlesford.gov.uk/media/10659/Housing-Trajectory-and-Five-Year-Land-Supply-1-April-2020-January-2021-/pdf/Housing_trajectory___5YLS_Statement_1_April_2020_Jan_2021A1.pdf?m=637473492369830000, Accessed 22/07/21.

Uttlesford Wellbeing Impact Checklist, Online at: https://www.uttlesford.gov.uk/article/2721/Health-and-Wellbeing-Impact-Checklist, accessed 26/05/21.

Wembridge, D., Al-Fulaij, N. & Langton, S. (2016) The state of Britain's Dormice in 2016. PTES, London

West Essex CCG, Letter to Uttlesford District Council. 26 August 2020. Ref. WECCG/UTT/20/2007/GR. Online at https://publicaccess.uttlesford.gov.uk/online-applications/files/E6BBE6DF80267F2D07A5E4AD79AE0906/pdf/UTT_20_2007_FUL-NHS_RESPONSE-3440912.pdf, access 02/06/21.

Woods Ballard, B, Wilson, Udale-Clarke, H, Illman, S, Scott, T, Ashley, R, Kellagher, R, (2015). The SuDS Manual (C753). London Construction Industry Research & Information Association (CIRIA).

Woods, M., McDonald, R.A. & Harris, S. (2003) Predation of wildlife by domestic cats *Felis catus* in Great Britain. *Mammal Review*, 33, 174-188.

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